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STARTLING STORIES

SEPT. 1942

A NOVEL OF THE FUTURE COMPLETE IN THIS ISSUE!

STARTLING STORIES

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A THRILLING
PUBLICATION

FEATURING

TWO WORLDS TO SAVE

An Amazing Novel of the Future
By WILLIAM MORRISON

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AND STAMPS
FOR VICTORY!

THE CUBIC CITY

A Hall of Fame Story
By LOUIS TUCKER



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Made of special 5-ply fibre, new laboratory-tested design saves copper, brass, nickel, chromium and other metals vital to war use!



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This national need—made more pressing than ever by wartime emergency conditions—has been answered by the world's largest

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Here it is—the new "Eveready" flashlight made of tough, 5-ply fibre—tested and proven under severest laboratory conditions.

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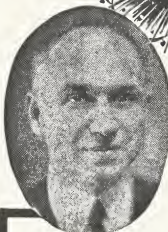
Keep flashlights loaded with dependable fresh DATED "Eveready" batteries—and have an extra set on hand for your light in case of long-continued use.

**FRESH BATTERIES LAST LONGER . . .
Look for the DATE-LINE**

With the
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States
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WHAT ARE
YOU
GOING TO DO TO
HELP?



**I Am Ready to
HELP YOU
Help
WIN THE WAR**

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Gives the case histories of famous crimes and how they were solved by experts. This book has been an "eye-opener" to thousands. It told them how they could prepare themselves at small cost and in short time to fill good-pay, responsible positions in Identification Work. Send for it FREE today, stating age.

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(Literature sent only to persons stating age.)

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City..... State.....

STARTLING STORIES

Vol. 8, No. 2

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By

WILLIAM MORRISON



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EARN A RADIO TECHNICIAN'S PAY

If you still have a low pay job—if the War has cut instead of jumped your pay—or if you now have a War job that you know won't last—take a tip from the hundreds of men who have jumped their pay by training at home in spare time to become Radio Technicians. Today these men enjoy good civilian and military jobs in a field with a bright peacetime future.

Here Is a Tested Way to Begin Earning More Money Quickly

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Why Radio Technicians Can Make \$30, \$40, \$50 a Week

The Radio repair business is booming because manufacturers have stopped making new home

and auto Radios and the country's 57,400,000 sets are getting older, requiring more repairs, new tubes, parts. This is opening new opportunities for full time and part time Radio Technicians to get good jobs, or to open their own Radio repair businesses. Radio Technicians and Operators hold good jobs in the country's 889 Broadcasting Stations and in Aviation, Police, Commercial, Marine Radio. Loud Speaker Systems give good jobs to many. The Government is calling for Civilian Radio Operators and Technicians. Military orders for tremendous quantities of Radio equipment are keeping Radio factories busy, opening more good job opportunities. Men who know Radio are in line for extra rank and pay in the Army and Navy. Radio development such as Television and Frequency Modulation, held back by the War, make Radio a live-wire field for the future.

Beginners Soon Learn to Earn \$5, \$10 a Week Extra in Spare Time

Due to the boom in the Radio repair business, practically every neighborhood offers opportunities for a good part time Radio Technician to make extra money fixing Radios. I

give you special training to show you how to start cashing in on these opportunities early. You get 8 Big Kits of Radio Parts and instructions for conducting experiments and building test equipment to help you do better, faster Radio repair work. My 50-50 method—half working with the Radio parts I send you, half studying my lesson texts—makes learning Radio at home interesting, fascinating; gives you valuable practical experience.

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MAIL THE COUPON. I'll send my 64-page Book FREE. It tells about my course; the present and future jobs in different branches of Radio; the money calls for Radio Technicians today. Read letters from more than 100 men I have trained so you can see what they are doing and earning. MAIL THE COUPON in an envelope or pasted on a penny postal.

J. E. SMITH, President
Dept. 2J69, National Radio Institute
Washington, D. C.

TRAINING MEN FOR VITAL RADIO JOBS

THIS FREE BOOK HAS SHOWN HUNDREDS HOW TO MAKE GOOD MONEY

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Name.....

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* W. H. S., Alabama.



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* Actual pupils' names on request. Pictures by Professional Models.

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Say "Yes" Next Time They Ask!

Surprise your friends! Learn to play the piano or other musical instruments this quick, easy way. First lesson starts you playing real tune.

YOU'VE often been asked that question: "Do you play?" Everybody looks at you expectantly, waiting for you to sit down at the piano and entertain the crowd. Are you compelled to embarrass yourself and throw cold water on the party by saying "No"?

What a difference it would make if you could say "Yes". Think of the good times and popularity in store if you could only play the piano or some other musical instrument—the guitar, violin, accordion, saxophone or whichever one happens to be your favorite.

Well, you CAN. You can learn to play any musical instrument you please. You can do it by a method that's **EASIER AND QUICKER** than you perhaps ever thought possible. It takes only a few minutes a day at home, at your own convenience. You save the expense of a private teacher, so the cost is trifling.

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I am interested in music study, particularly in the instrument indicated below. Please send me your free booklet, "How to Learn Music at Home," and your Print and Picture Sample. (Do you have instrument?)

Piano	Saxophone	Cornet
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Guitar	Trombone	Plain Accordion
Cello	Tenor Banjo	Hawaiian Guitar
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Street

City State

NOTE: If under 16 years of age, parent must sign coupon.

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...and I'll prove I can make you a NEW MAN

I'M "trading-in" old bodies for new! I'm taking men who know that the condition of their arms, shoulders, chests and legs—their strength, "wind," and endurance—is not 100%. And I'm making NEW MEN of them.

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I Was a 97-lb. Weaking

All the world knows I was **ONCE** a skinny, puny 97-pound weakling. And NOW I know that I won this. "The World's Most Perfectly Developed Man." Against all odds! How did I do it? How do I work miracles in the bodies of

other men is only 15 minutes a day! The answer is "Dynamia Teseion," the amazing method I discovered and which changed me from 97-pound weakling into the champion you see here!

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Are you **ALL MAN**—tough-muscled, on your toes every minute, with all the up-and-at-'em that can lift your weight in wildcats? Or do you need the help I can give you—the help that has already worked such wonders for other fellows, everywhere?

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MAIL THIS COUPON NOW!

**CHARLES ATLAS, Dept. 77-Y,
115 East 23rd St., New York City**

I want the proof that your system of "Dynamia Teseion" will help make a New Man of me—give me a healthy, husky body and big muscular development. Send me your free book, "Everlasting Health and Strength."

Name (Please Print or Write Plainly)

Address

City State



Here's PROOF Right Here!

"Results come so fast by your method that it seems just as if some magician put on the pounds of solid muscle just where you want them."
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"Feel like a million dollars and have a 44" normal chest—**A 2" GAIN!**"
—L. A. S., Illinois

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—B. L., Oregon

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—B. M., Ohio



Actual photo of the man who holds the title, "The World's Most Perfectly Developed Man."

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America's Greatest "Builder of Men!"

Among all the physical instructors and conditioners of men—**ONLY ONE NAME STANDS OUT!** That name is **CHARLES ATLAS!**

In every part of the country Charles Atlas is recognized as "America's Greatest Builder of Men." Almost two million men have written to him. Thousands upon thousands have put their physical development into his hands!

And now that the call is for men capable of helping America meet and conquer any national emergency, many thousands of others (even those already in their country's Army and Navy) are calling upon Charles Atlas to build the kind of men America rightly needs.



LET'S GET THIS STRAIGHT



THIS WAR is being fought by a big Army. It's an army that is called the United States.

Millions of us are in uniforms and many more millions are not, but how we happen to be dressed isn't what's important.

What is important is whether every one of us is in this fight, giving it everything we have. Any less won't win.

Whether you're a soldier on the firing line, or are backing him up as a soldier on the production line, you're fighting for the same things.

The decision, whether or not we are to live in a decent world as free men in the years to come, is in the making now. It's up to you, Soldier.

A Robert Smolmg

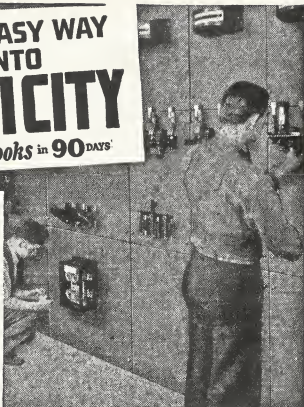
Colonel, G.S.C.
UNITED STATES ARMY

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Electricity is the mighty power behind our Victory Program. Trained Electrical men are needed. PREPARE FOR YOUR PLACE this amazingly easy way. "Learn By Doing" in 12 weeks. You don't need much money—I'll finance your training. READ EVERY WORD OF MY MESSAGE ON THIS PAGE AND SEE HOW YOU CAN DO YOUR PART EITHER IN THE ARMED FORCES OR INDUSTRY.



How Can You Best Serve Your Country Now? How Can You Best Serve Your Country After the War?

IF YOU'RE DRAFTED

If you enter the Army as a trained electrical man, you are eligible to apply for higher rating and bigger pay. In both the Army and the Navy, rated Electrical Workers hold mighty important jobs—just as skilled Electrical Workers hold vital jobs in civilian life. AND THIS IS IMPORTANT: There will be a TREMENDOUS NEED for trained Electrical men after the war. By getting your Electrical Training NOW, you will be ready for a BIG PAY, BIG FUTURE JOB after your service in the Army is over.

IF YOU'RE DEFERRED

Everyone cannot serve in our Armed Forces . . . Some may be too young . . . others too old . . . others with dependents . . . and others with some physical defect. If you cannot serve, don't be discouraged. FROM 16 to 50, EVERYONE WITH PROPER TRAINING CAN SERVE IN WAR INDUSTRY . . . turning out weapons and materials. And remember: Electricity in war time is essentially no different from Electricity in peace time. After the war you'll be an all-around SKILLED ELECTRICIAN ready for a good-pay Peace-time job.



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Send me your Free Book and tell me about your plans to help me.

NAME.....

ADDRESS.....

CITY..... STATE.....



FOOT ITCH

ATHLETE'S FOOT

**Send Coupon
Don't Pay Until Relieved**

At least 50% of the adult population of the United States are being attacked by the disease known as Athlete's Foot.

Usually the disease starts between the toes. Little watery blisters form, and the skin cracks and peels. After a while, the itching becomes intense, and you feel as though you would like to scratch off all the skin.

BEWARE OF IT SPREADING

Often the disease travels all over the bottom of the feet. The soles of your feet become red and swollen. The skin also cracks and peels, and the itching becomes worse and worse.

Get relief from this disease as quickly as possible, because it is very contagious, and it may go to your hands or even to the under arm or crotch of the legs.

DISEASE OFTEN MISUNDERSTOOD

The cause of the disease is not a germ as so many people think, but a vegetable growth that becomes buried beneath the outer tissues of the skin.

To obtain relief the medicine to be used must first gently dissolve or remove the outer skin and then kill the vegetable growth.

This growth is so hard to kill that a test shows it takes 15 minutes of boiling to destroy it; however, laboratory tests also show that H. F. will kill it upon contact in 15 seconds.

DOUBLE ACTION NEEDED

Recently H. F. was developed solely for the purpose of relieving Athlete's Foot. It both gently dissolves the skin and then kills the vegetable growth upon contact. Both actions are necessary for prompt relief.

H. F. is a liquid that doesn't stain. You just paint the infected parts nightly before going to bed.

H. F. SENT ON FREE TRIAL

Sign and mail the coupon, and a bottle of H. F. will be mailed you immediately. Don't send any money and don't pay the postman any money; don't pay anything any time unless H. F. is helping you. If it does help you, we know you will be glad to send us \$1 for the bottle at the end of ten days. That's how much faith we have in H. F. Read, sign and mail the coupon today.



GORE PRODUCTS, INC. T.F.

814 Perdido St., New Orleans, La.

Please send me immediately a bottle of H. F. for foot trouble as described above. I agree to use it according to directions. If at the end of 10 days my feet are getting better, I will send you \$1. If I am not entirely satisfied, I will return the unused portion of the bottle to you within 15 days from the time I receive it.

NAME _____

ADDRESS _____

CITY _____ STATE _____

don't **Worry** about Rupture

• Why put up with days . . . months . . . YEARS of discomfort, worry and fear? Learn now about this perfected invention for all forms of reducible rupture. Surely you keenly desire—you eagerly CRAVE to enjoy life's normal activities and pleasures once again. To work . . . to play . . . to live . . . to love . . . with the haunting Fear of Rupture banished from your thoughts! Literally *thousands* of rupture sufferers have entered this Kingdom of *Paradise Regained*. Why not you? Some wise man said, "Nothing is impossible in this world"—and it is true, for where other trusses have failed is where we have had our greatest success in many cases! Even doctors—thousands of them—have ordered for themselves and their patients. Unless your case is absolutely hopeless, *do not despair*. The coupon below brings our Free Rupture Book in plain envelope. Send the coupon now.

Patented AIR-CUSHION Support Gives Nature a Chance to CLOSE the OPENING

Think of it! Here's a surprising yet simple-acting invention that permits Nature to close the opening—that holds the rupture securely but gently, day and night, at work and at play! Thousands of grateful letters express heartfelt thanks for results beyond the expectation of the writers. What is this invention—How does it work? Will it help me? Get the complete, fascinating facts on the Brooks Automatic Air Cushion Appliance—send now for free Rupture Book.

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Rich or poor—ANYONE can afford to buy this remarkable, LOW-PRICED rupture invention! But look out for imitations and counterfeits. The Genuine Brooks Air-Cushion Truss is never sold in stores or by agents. Your Brooks is made up, after your order is received, to fit your particular case. You buy direct at the low "maker-to-user" price. The perfected Brooks is sanitary, lightweight, inconspicuous. Has no hard pads to gouge painfully into the flesh, no stiff, punishing springs, no metal circle to rust or corrode. It brings heavenly comfort and security—while the Automatic Air Cushion continually works, in its own, unique way, to help Nature get results! Learn what this patented invention can mean to you—send coupon quick!



C. E. BROOKS,
Inventor

SENT ON TRIAL!

No . . . don't order a Brooks now—FIRST get the complete revealing explanation of this world-famous rupture invention. THEN decide whether you want the comfort—the freedom from fear and worry—the security—the same amazing results thousands of men, women and children have reported. They found our invention the answer to their prayers! Why can't you? And you risk nothing as the complete appliance is SENT ON TRIAL. Surely you owe it to yourself to investigate this no-risk trial. Send for the facts now—today—hurry! All correspondence strictly confidential.

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Send You In Plain Envelope Just Clip and Send Coupon →

Brooks Appliance Co., 182-D State St., Marshall, Mich.



(PROOF!)

Proof of the value and outstanding merit of the BROOKS APPLIANCE is clearly shown by the fact that over 9000 doctors have ordered it for themselves or their patients. One doctor alone has ordered for his patients over 400 Brooks Appliances. Follow your doctor's advice! If he says you have a reducible rupture and advises a proper-fitting support, don't subject yourself to further delay, which may prove dangerous, but send us your name and address immediately. Stop Your Rupture Worries! Enjoy the comfort, freedom of action and physical security which this made-to-order appliance will give you.

Mail This Coupon NOW!

BROOKS APPLIANCE CO.
182-D State St., Marshall, Mich.

Without obligation, please send your FREE Book on Rupture, Proof of Results, and TRIAL OFFER—all in plain envelope.

Name _____

Street _____

City _____ State _____

State whether for Man ☐ Woman ☐ or Child ☐



Capt. Turnbull (1806-1900)—like other old salts of his day—rocked a keg of whiskey under his rocker. Its roll recaptured the motion of the wave-tossed ships on which he'd mellowed many a barrel of whiskey.

From Mellow Whiskeys "Rocked in the Keg" came the Idea for Rocking Chair!



Mr. Boston knows rocking mellow a whiskey's flavor. So he achieves Rocking Chair's richness by controlled agitation in his special blending process.



Get acquainted with Rocking Chair's smoothness! Buy a bottle—enjoy the mellow taste that made keg-rocked whiskeys so famous. The price is low!

85 Proof (90 Proof in some States)
75% Grain Neutral Spirits
Ben-Burk, Inc., Boston, Mass.



OLD MR. BOSTON

BRAND

ROCKING CHAIR

BLENDED WHISKEY



It would take
a college education
to know 'em all



I Went Nuts in Liquor Stores —by don herold

I used to go crazy in liquor stores, trying to decide which brand to buy. So many brands! The confusion is terrific for the layman liquor layer-inner.

Then a friend told me his system. He said "I've settled on Old Mr. Boston as MY brand —no matter what type of fine liquor I want."

Me—I have too, now.

It turns out that Old Mr. Boston is the one brand name under which you can buy almost every known type of fine liquor. Other big companies make many liquors, but they give them many different names. It's baffling! It's befuddling!

In the Old Mr. Boston line you can buy 30 different liquors, all under the one name, and all easy on the palate and pocketbook.

Old
Mr. Boston,
you're
my pal



You know Boston. And you know its fine old reputation for craftsmanship. Well, you can smack a taste of the old town's 300-year-old reputation for quality in every drop of every Mr. Boston product.

So why not try the Old Mr. Herold plan and use Old Mr. Boston "as a handle by which to call your shots" when you want fine liquors?



Carson projected an image of Nora stepping toward the spaceship. (Chap. V)

Two Worlds to Save

By WILLIAM MORRISON

CHAPTER I

Strange Vessel

THE huge pipe wrench he was using was not a convenient thing to handle under the best of conditions. Down here, under thirty fathoms of water, it was very much of a nuisance, what with his cumbersome diving outfit. Nevertheless, he man-

aged to unscrew the connection between the warm-water pipe and the stationary submarine engine.

He moved so that the bull's-eye electric lamp attached to his breast-plate shone inside the valve on the engine side. This was the last possible checking point for the pump trouble. If he didn't find it here, that meant the entire submarine power-converter plant would have to be dismantled and raised

AN AMAZING NOVEL OF THE FUTURE

Douglas Carson Catapults into Action When

to the surface for repairs. It would take weeks—and that meant that the project might be abandoned.

It had taken all of his persuasive arguments and all of the company's political power to get the World Fuel Research Commission to okay the installation of this first full-size unit. It was terribly important. If it failed, the company failed with it, and if somebody else didn't come forward quickly with a solution for fuel shortage, Earth was doomed to revert sharply and cruelly to barbarism.

Thus, Douglas Carson's earnest, rugged face was grim as he peered into the exposed valve. Several small pebbles or bits of coral had managed to get down through the intake pipe to be trapped by the wire screen. These had not caused the stoppage, although they had no business being there.

Instead, a small fish had somehow been sucked into the surface pipe to end up down here against the screen of the engine's intake valve. The fish, of course, was dead—smashed and crushed by the enormous pressure of water and mangled by the powerful piston pumps of the surface intake.

Carson's face relaxed a bit as he realized the trouble was not serious. There were many fish and things near the surface in these semi-tropic waters off the Bahamas—but they should never get into the pipe-lines like this. Was it possible that the Orlando Company had managed to place a saboteur aboard the *America*?

MAKING a mental note to check up thoroughly on the personnel, Carson reached in clumsily with his flexible steel-encased fingers and removed the clogging body. His head was beginning to ache from the high pressure as he started fitting the pipes together again. He threw all his weight against the pipe wrench. Another few turns, and he would be

through. A drifting shadow moved by over his head, deepening the gloom of the semi-opaque gray-green water.

A shark, hungry and uncertain, was hovering about restlessly, trying to make up its mind. But Carson, contemptuous of sharks in general and convinced that this one would not attack, was thinking about other things.

He was thinking of the time and money that had so far been spent on this scientific project that, at one time, seemed to have odds of a million-to-one against it.

The workings of the process were extremely complicated, but the idea behind it was simple enough. The surface waters of the ocean were heated by the sun. In the course of nature, they would mingle eventually with the colder waters below, and their potentiality for doing work would be wasted.

What could be more sensible than for man to equalize these water temperatures in a suitable engine, and make use of the otherwise wasted energy?

Theoretically, the idea was sound. Wherever there was a difference of temperature between two bodies, physicists had learned that it was possible to get work done. When the difference was large, as between superheated steam and cold water, the efficiency was relatively high, and the process was worth operating.

That was the basic principle on which the steam engine worked. On the other hand, when the difference was small, the efficiency was low. In this case, however, although the efficiency was much lower than Carson would have desired, there was a compensating factor. His fuel cost him nothing.

He and the men with whom he was working had not been the first to have the idea. Well-known scientists had tried to put it into operation, and failed. Claude, the Frenchman whose name was associated with neon lights, had been one of them.

Three Stalwart Adventurers Trace on the Planet

Earth Hovers on the Brink of Global Tragedy!

It had been found possible to get energy from the warm waters as expected, but the output hadn't been worth the cost. It was necessary to use expensive machinery, to operate heavy pumps.

Earlier industrialists had been cursed by the lack of a suitable fluid for use as water was used in steam engines, or mercury or diphenyl in the more efficient high-temperature engines.

Now, of course, early in the year

At this moment, when they had driven down those apparent odds of a million-to-one, and were in sight of success, to have the works clogged up by this dead fish—

Out of the corner of his eye, Carson caught a glimpse of a slimy body hurtling through the water. The shark had finally chose the moment to strike. It had withdrawn a few feet, as if to get a start for its drive against the div-



DOUGLAS CARSON

2052, scientists started out with certain advantages in the way of new methods and new materials. And there was the tremendously increased importance of the project to drive them on. All the same, there had been difficulties that had taken Carson's party months to overcome.

ing suit. Now, with its rows of teeth grinning, it was rushing forward with the speed of an express train.

Through his perspiration-filmed goggles, Carson could see the rushing form only dimly, but he had no time to waste seeking a clearer view.

Both hands gripping the heavy

Mercury the Pattern of Their Future Destiny!



A single bound took Carson to the animal's back, in Mercury's greatly lessened gravity. (Chap. VI)

wrench, he smashed through the resisting water with all his strength. The metal jaws caught the shark on the side of its snout, cut through the sandpaper skin into the flesh.

The monster's grinning teeth closed in agony as the water around Carson washed red with blood.

The huge fish swerved, came to a stop, turned around. As calmly as if he had all the time in the world, Carson applied the wrench to the pipe connection once more. He gave a last twist, then prepared to pull three times on the air hose. But the sight of a second shark coming into view through his goggles caused him to hesitate.

The forward part of this shark's body was encased in a peculiar transparent material, obviously the remains of a helmeted diving suit, but of a type Carson had never seen before. Some poor devil of a diver, he thought, had been caught in a situation like his own, but hadn't been lucky enough to get away.

The shark, devouring its victim's body, had got a portion of the diving suit caught around him, and couldn't get it off again.

Carson racked his memory in an effort to recall any salvage expedition in the neighborhood. He failed, shrugged mentally and gave the signal to be pulled up. He began to rise through the water just in time to forestall a second attack.

An hour later, having undergone a slow decompression process, Carson was out of his diving suit, breathing into his lungs the fresh ocean air. A girl came out of the ship's main cabin and stared at him.

She saw a tall man, a fraction of an inch over six feet, his husky body as finely trained as that of a prize-fighter before an important bout. There was determination both in the cut of the square jaw and in the glint of the gray eyes.

Despite herself, Nora Sayres felt



a thrill of admiration.

Technically, Frank Haines was in charge of this undertaking, but he was really a sort of watch-dog for the company. Douglas Carson was actually in charge of the expedition. Nora had known both men for years and was coolly aware of the fact that Haines was head-over-heels in love with her. But she had eyes only for Douglas Carson, and the young scientist was too wrapped up in his work to see in her anything more than an efficient oceanographer.

"Douglas!" she said in sharp reproof, and no hint of her personal feelings was reflected in her tones. "You shouldn't have gone down to fix that engine. You're not a diver."

CARSON shrugged. The deck of the *America* was aquiver from the throbbing of the resumed pounding of the pumps.

"It had to be done, Nora," he replied. "It was the last chance of a minor mishap, and I just couldn't wait for the regular diver to make the check. Were you really worried?"

"Only for the sharks," she answered quickly.

Carson laughed. Then his face clouded. "There were a couple of sharks down there all right, but I am more worried about the presence of a tiny fish. I found one *inside* the valve. Come with me to the office, Nora. I want to talk to you about that. Frankly, I'm uneasy."

"You mean you suspect that—"

"I'm not sure. Let's go over the list of men working on this project."

They descended to the main cabin and went on into the smaller stateroom which had been fitted up as a sort of business office. This was actually Frank Haines' province, but Carson considered the matter too serious to worry about technicalities now. Together, he and the girl started going over the list of employees.

As they both bent over the desk, Carson became aware of a wisp of the girl's fragrant hair brushing his cheek. He was astonished to realize that he liked it. And then, just as Nora raised her head to look at him and comment on an Italian foreman who might possibly be interested in the work of the Orlando Company to harness volcanic steam, Carson noted for the first time how brown were her eyes. Nora Sayres, expert oceanographer, was a lovely woman!

Before he knew what he was doing, Carson leaned forward and kissed her full on her sweet lips. The girl did not move, but her eyes flew wide in surprise. For an instant neither of them spoke. Then Carson colored to his hairline. He looked baffled and stunned.

"Nora—Miss Sayres," he stammered, "I don't know what made me do that. I apologize. I must be crazy!"

"Then you didn't mean it?" she asked in a slightly strained voice.

"I—ah—of course, I meant it! That is, I don't mean to—to—"

"I trust I'm not breaking in on a tete-a-tete," said a baritone voice, and they started apart.

A man stood in the doorway, scowling at them. His figure was large and athletic, his hair attractive and vigorous. Frank Haines.

"What do you want?" Carson asked sharply.

"I was under the impression that this was my office," said Haines acidly. "The question is, what do you want?"

Carson regained his composure. "I want information, Haines. Where have you been since I came up from below?"

"Seeing that the pumps got started again," said Haines shortly. "Let me remind you both that we have plenty

of work to do. We are away behind schedule. You, Nora, are supposed to be an oceanographer. You've a lot of information to compile about local ocean currents."

"I'm doing it, Frank Haines," the girl snapped.

THE man glared at her.

"You're not doing the job you should. I didn't think it was such a good idea in the first place to have a woman scientist along—especially a good-looking one like you, but I didn't know you would distract the serious Mr. Douglas Carson."

"You seldom figure things right," Carson assured him bitingly. "I don't exactly suspect anything—yet, but I want us to check every man on this project. I found a fish clogging the intake valve of the engine, and it could only have got there through carelessness or deliberate sabotage up here on the *America*. That's why Nora and I were—"

"The great scientist found a fish in the ocean," interrupted Haines scornfully. "That's the worst fish story I ever heard. You'd better get back to your engines, Carson, if you don't want this whole undertaking to fall through."

Carson began to get angry. "See here, Simon Legree, if you aren't interested enough to check the personnel with me, all right. As for me going right back to work, you know very well that even an experienced diver should take a rest after coming up from below. I'm taking mine now."

"It's a nice way of resting," said Haines sneeringly, glancing at the girl.

"Now, see here, Haines," said Carson savagely, "I don't know what's the matter with you today—unless you are guilty of what I am suspecting—and I don't believe that. I know you are nominally in charge of this expedition, but you are not taking this little trouble seriously enough. Certainly, it was a minor thing, and it may easily have been a careless accident. But we can't afford to have accidents at this critical stage of things."

"We stepped into this project with our eyes open. It's just about the most

important job in the world right now, although darn few people suspect it. All over this planet of ours, oil wells and coal mines have become exhausted during the last century, as you know. And now, even though everybody in the world wants to remain at peace, that's impossible—because there aren't enough sources of fuel to go around.

"That's why there's imminent danger of catastrophe. The wheels of all progress will stop—unless it's prevented. And we're the only people who have hopes of offering quick and plentiful power to the whole world.

"We've got about a half-year, until September fifteenth, to be precise. If we can show that these improvements on Claude's process will enable us to tap the oceans for energy, and thus make oil and coal unnecessary, there'll be no cause for panic. If we can't—well, it will mean that civilization may finally blow up altogether.

HAINES growled impatiently. "Aren't you exaggerating our importance a little, Carson? There's water power, and there are new methods of obtaining energy directly from the sun—"

"I'm not exaggerating our importance one bit!" Carson cut him off. "There isn't enough water power to go around, and the solar energy stations are too inefficient. No, everything depends on this ship."

The floor seemed to tremble under his feet, reminding him again that the pumps were going. They pounded along at almost maximum capacity, driving the warm surface water down into the deeply submerged heat engine, where it gave up its energy to perform useful work, and was then discharged to mingle with the cold waters of the ocean depths.

"Those pumps are more important than either you or me. That's why I don't give a hoot who collects the glory on this job. My interest is in seeing that the job gets done. And anybody who gets in my way is going to be sorry for making a bad mistake!"

"That," said Haines grudgingly, "is the way I feel, too. Now, what is all this talk about possible sabotage? I

personally checked back on every man the company hired to work on this project. I think you're crazy, but I won't leave any stone unturned to make sure that everything's functioning smoothly. Just whom do you suspect?"

"That's just it," said Carson. "I suspect nobody in particular. This was probably an accident. I just want to make sure."

Before he could go on to explain, a man came rushing into the business office. It was McGraw, overalled foreman on one of the pump shifts. He was excited.

"What is it, McGraw?" Haines asked quickly.

"There's a strange-looking craft about a quarter of a mile ahead of us, sir," exclaimed the foreman. "We just noticed it when the fog lifted."

"Any name?"

"We can't see any, sir. It's low in the water, and looks as if it might be a submarine. But it seems to be drifting before the wind."

Carson frowned.

"You say there's no sign of anyone aboard?" he asked.

"We hailed it, and got no answer."

Carson's face darkened as he looked at Haines, their dislike for each other temporarily forgotten.

"There's something funny as the devil about this. There shouldn't be any submarines in these waters."

Haines nodded in agreement.

"I'm trying to figure out if there's anybody interested in stopping our work. This boat may not mean a thing, but all the same I don't like to see any strangers snooping around."

Nora remembered something.

"We saw a sudden fog take shape, like a distant cloud of steam, a couple of days back. I'm wondering whether it had any connection with this strange craft."

"It seems probable," agreed Carson. "And there's something else that I noticed under the surface a little while ago. I saw a shark with a peculiar helmet on its body, probably picked up from an unlucky diver. It seems we're not the only people in this neighborhood."

He moved toward the door.

"I suggest that we pay this strange vessel a visit," he said.

"I'm coming with you," Nora declared.

Haines looked at her uneasily.

"It may be dangerous, Nora—"

Then he turned to glance at Carson, and shrugged his shoulders with a feeling of helplessness. The girl had a will of her own, all right. And he didn't feel like ordering her flatly to remain behind.

THEY descended into a small motorboat. McGraw, the pump foreman, went with them, along with a member of the ship's crew.

As they approached the strange craft, Carson gazed at it silently. It was about a hundred and fifty feet long, a shining gray in color, and without any sign of identification. The thing was shaped more like a dirigible than a submarine, and Carson judged that it was not designed to slip readily through the water. It bore no guns.

Carson continued to study it as they chugged slowly alongside. About its center, there was an opening several feet wide.

"Ahoy, there!" Carson yelled.

There was no answer.

"It appears to be deserted, sir," said McGraw.

"In that case, I'm going aboard to take a look," Carson said determinedly.

He climbed on to the gray surface, which was less slippery than it had seemed at first. Behind him Nora followed slowly, while Haines hesitated somewhat. Carson helped her up, and then dropped lightly into the interior. Immediately Haines followed, instructing the boat crew to remain alongside.

One quick glance was enough to tell Carson that the inside of the vessel was deserted. He noticed there were no lights on. But enough illumination entered from outside to enable him to see, and it struck him immediately as odd that there was no machinery visible.

Knowing how cramped the ordinary submarine was, Carson was at once impressed with the spaciousness of the interior. They were in a room about fifty feet long. At each end, a doorway

opened off into smaller rooms. Beyond these, their way was barred by smooth gray walls, apparently of the same material as the outside hull of the submarine.

Carson's forehead wrinkled in a puzzled frown. The arrangement was the queerest he had ever seen. There was no indication of a single lever or instrument that could control the motion of the strange ship. Whatever driving mechanism the vessel had was hidden beyond those walls.

"How did this thing get here?" Haines was asking. "It can't have driven very far before the wind."

Carson shrugged. He couldn't even begin to guess. His eyes searched the ship and found four windows, two on each side.

He had never heard of a submarine like this.

Suddenly his thoughts were interrupted by a cry from Nora.

"Here seems to be a note!" she exclaimed.

"I don't see any paper," said Haines in annoyance.

"It isn't on paper. There, that small dark metal plate on that stand. There are letters of light on it."

"Well, what does it say?"

"I—I don't know." Nora was confused. "It isn't in any language I've ever heard of."

Carson's forehead wrinkled. Instead of clearing anything up, the note only seemed to make things more puzzling. Haines' voice was gruff but eager.

"Let's have a look at it, Nora."

Carson watched him pick up the metal plate. That same instant, he realized, the opening through which they had come closed silently, shutting out the daylight. A dull glow from the sides of the vessel took its place. Haines, staring at the metal plate, seemed to be unconscious of the change.

"There's nothing on this plate," he said in bewilderment.

Nora looked over his shoulder in amazement. "Why, the letters of light are gone!" she cried. "What can it mean?"

"We are also locked in, apparently," commented Carson grimly. "Is this a trick of yours, Haines—having Mc-

Graw shut us in this tubular contraption?"

The sudden fear that leaped to Haines' face was genuine. He looked around in dismay and then leaped toward the closed panel of queer metal. He uttered an oath and hammered on the panel with his fists.

The port was immovable. They were caught.

Then they all became aware of a strange sensation—as though they were going up in an express elevator. With a shout of alarm, Carson sprang to one of the queerly transparent windows.

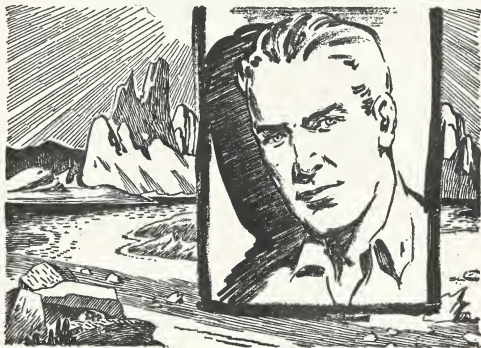
ocean. "The sea! It's dropping away from us!"

This incredible statement was true. The individual waves were already indistinguishable. Off to the left, their ship, the *America*, was growing smaller by the second.

CHAPTER II

Off the Earth

DOUGLAS CARSON felt as if his stomach had suddenly dropped out of him, leaving an empty place where it had been. He had a sensation



FRANK HAINES

Nora followed him, clutching at his shoulder for support.

All three felt the pull of gravity increasing as the strange vessel picked up speed. But there was no feeling of being jerked forward or to one side, as would have been the case had they been traveling in any direction more or less parallel to the surface of the sea.

"Good heavens!" exclaimed Nora fearfully as she stared down at the

of stark fear such as he had never before thought he could experience. He opened his mouth to speak, and no words came out.

Unintentionally, he caught a glimpse of Haines' face. The man was pale with terror, his lower jaw trembling so noticeably that Carson would not have been surprised to hear his teeth chatter. And Haines was no coward.

"W-what—" Nora stammered.

A dull roar came to their ears as the vessel began to turn, so that the part they had taken for the stern became the forward part of the ship. Carson opened his mouth again, and this time words came out, hoarse and almost indistinguishable.

"What do you think—"

The others shook their heads.

Carson had a growing feeling of bewilderment.

"Where—where are the people who are kidnaping us?" he blurted out.

Haines swallowed hard, and nodded toward the front of the ship.

"They must be up there," he said.

"There's no sign of them."

"Maybe they'll show up later," Haines said weakly.

"But who can they be?" Nora cried.

"I don't know," Carson muttered. "But I'll find out if I'm ever able to move. I've got that feeling you have when an elevator car starts going up suddenly. And the feeling isn't letting up."

"It's the acceleration," said Nora sagely.

Carson nodded.

"We must be going fast as the deuce now," he said. "Close to a mile every couple of seconds. And speeding up all the time."

"It's impossible!" Haines snapped. "Nothing on earth will go that fast."

In the pause that followed, they could hear, even through the dull roar of the ship, the ticking of Nora's wrist-watch. Nora looked at the dial.

"It was about ten after three when we got into this thing. We've been moving for about five minutes and I'm afraid—I'm afraid Douglas is right."

Carson's lips were dry. He moistened them with his tongue.

"A mile a second. And speeding up. Who do you think made this ship? And where does it come from?"

Haines' forehead was glistening with beads of sweat.

"Those people—up front—will tell us."

"But there doesn't seem to be anybody," Nora said faintly.

"You mean we're being kidnaped—by remote control?"

"It looks that way."

Carson ripped out an oath.

"I'm going to find out," he declared.

There were projections that resembled doorknobs along the side of the ship. Making use of them to hold on, Carson began slowly to drag himself along. He reached a window, looked out and his body trembled with surprise.

"It's night!" he cried. "There's no sunlight."

"But it isn't half-past three yet," said Nora unsteadily.

"I can see the stars. I've never seen them that bright before."

"We—we've been going so fast," Haines stammered. "Do you think we've gone so far around the earth that we've reached the part where the sun has set?"

"But why should the stars be so bright?" Nora asked.

"Because"—Carson swallowed and went on—"because there's no air, no dust, no clouds to hide them. That's why it's dark too. Even though the sun is still shining, we don't see it because there's nothing to diffract its rays. We can make it out only when we look straight at it, or when something reflects its light into our eyes."

"Then if there's no air outside, we're really—"

"We're really off some place in space," Carson said unhappily.

HAINES was actually greenish by now, and Carson had that same feeling of emptiness he had experienced at first.

"I wish," Nora said shakily, "I wish I could faint, and not know what's going on until everything is finished. But I can't. I just feel dizzy."

"That's the acceleration."

"Are you sure, Carson, about our being off in space?" Haines asked hollowly.

"I wish to God I wasn't. But figure it out for yourself. Suppose the acceleration is half gravity, or a quarter, or even a tenth. Actually it's more than that, but call it a tenth. We can't be going less than several miles a second. And we've been moving for how long?"

Nora looked at her watch.

"Twenty-five minutes," she said.

"Twenty-five minutes. Escape velocity from the surface of the earth is only seven miles a second. Up here it's much less. We're not staying on Earth."

"But where can we be going?" Nora gasped.

"It's too early to tell, and as for guessing—" Carson tried to force a smile, and failed. "You can do that as well as I can."

"But why should anyone from—well, not from Earth—want us? What do they expect to do with us?"

"I can't imagine."

Haines' voice was husky.

"If they can build a craft like this, they can do anything. Then why would they go to the trouble of collecting three human specimens that to them must seem like pretty poor things?"

"Do you think they're what we'd call—human?" Nora shuddered.

For a long moment no one answered.

"Let's take a good look at the situation," Carson said shakily. "We've torn loose from everything we've ever known. We're at the mercy of people who may be willing to kill us as soon as look at us. But so far, outside of scaring us almost to death, they haven't done anything to harm us."

"So far," muttered Haines.

"Then why look for trouble? We might just as well wait for something to happen to us, before crying about what a tough spot we're in. And we might just as well forget all those questions we've been asking. We haven't any way of getting an answer to them, and we won't have for a long time."

"All we're going to succeed in doing is to drive ourselves crazy with fear. I know it's hard to control our minds and not speculate on what's going to happen, but there's no sense to it. From now on, let's cut it out. Let's stop being afraid."

"That's an idea," Haines conceded ruefully.

CARSON nodded.

"Okay. Now, then—we've got something important to worry about. First, there's the question of what's happening to that project of ours. With the three of us out of the way, work must have stopped already."

"I'm afraid so," Haines agreed. "But there wasn't any sabotage. I accidentally left the intake sluice-gate open this morning."

"We didn't have too much time to spare at best, and now that we'll be away for a while—" Carson bit his lip. "If we go back later than a month from today, we won't have much chance of success. And if we return in six months, it will probably be to find a world in the process of becoming stagnant for want of power."

"Never mind that," Haines said. "What about ourselves?" He and Nora looked at Carson questioningly.

"It's time we had a look for the pilot of this craft," Carson decided. "Maybe we're not being kidnapped by automatic or remote control, as we thought at first. It would be easy for someone to be hidden up front, out of sight behind those gray walls."

The moment they had something to do, they felt better. They pulled themselves along the side of the ship, probing every square inch of surface. It was Nora who made the first discovery.

"There's food!" she shouted to Carson, who was at the other end of the ship.

"Much of it?"

"Enough for all of us for more than a month. There are a lot of cans, and the labels indicate almost everything from beans to plum pudding. And there's a store of water."

"Looks as if somebody was just waiting for us to step in here."

They went on with the search. The rear part of the ship was divided by several partitions, and there were separate rooms that Nora and the two men could use to sleep in. But they saw no sign of any living creature other than themselves.

A sudden scream from Nora interrupted the search.

Far in the distance, a huge object that must have been as big as a battleship seemed to be racing to meet them.

It was the end, thought Carson. They wouldn't have to speculate any longer as to what would become of them. Now they knew—

A wave of green light flashed into being from the side of the ship. The

meteor disappeared, a cloud of luminous mist took its place and was gone a moment later, and then the distant stars sprang back into view.

Unharmcd, the vessel plunged on in space. Its three prisoners looked at each other, and their faces were pale with fear.

CHAPTER III

End of the Line

HALF an hour later, the moon drifted past, a vast globe that shone with a light almost as bright as that of day. The familiar features that Carson knew had been replaced by craters and mountains no man had ever seen before, for this was a side of the satellite that never faced the earth. But it hung outside the windows of one side of the ship for only a few moments, and then was gone.

Haines, a look of stupefaction on his face, stared in silence.

"Was that the—"

"It was," Carson assured him.

He himself was feeling shaky again. But he wouldn't let Haines see him afraid.

As time passed, he began to feel more calm. About eight o'clock, when hunger finally drove them to the food with which the ship was stocked, the three were talking almost as if they were at ease.

They were not yet out of effective reach of the earth's gravity, and the acceleration of the ship apparently supplied just enough gravity of its own so that their weight seemed only slightly less than usual.

As a result, they were not physically uncomfortable, and a few hours after they had eaten, Carson suggested that they turn in and get some rest. Nora and Haines stared at him a moment, as though the idea had never entered their heads. Then the girl yawned.

"That's a swell idea," she said. "I'm all in."

Carson grinned tightly.

"Don't forget to wind your watch," he said. "I left mine in my other

clothes. Yours is the only means we have of telling time."

"I'll remember," the girl assured him.

Whether Haines tried to go to sleep or not, Carson did not know. He himself lay awake hour after hour, and only after what seemed like days did he drowse off uneasily. Shortly afterward, some time during what would ordinarily have been night, the roar of the motors ceased suddenly, and the silence registered in his subconscious, awakening him.

The dim light that came from the walls of the vessel was still on. Carson touched the wall in order to get to his feet—and found himself floating in air. Every muscle and every fiber of his body was weightless, and no part of him was under tension. He felt more completely relaxed than ever before in his life.

He saw Nora and Haines floating in similar fashion. Haines made a frantic movement to grab the side of the ship and missed, succeeding only in twisting over and performing a somersault in the air. To Carson, Haines and the girl looked more like figures in a magician's act than anything else.

"Why did they turn off the motors?" Haines shouted across the cabin.

"To save fuel, of course," Carson replied. "They apparently don't feel they can afford to waste it. As a matter of fact, we're going thousands of miles an hour right now. But as there's no acceleration, we don't feel anything."

There was a quick flash of green light outside the ship. They felt a slight trembling, then they were traveling quietly again.

"Another meteor," said Haines. "And it came at us so fast that we didn't even see it. What'll happen when one comes along too big for that green thing to handle?"

"You're worrying again, Haines," Carson observed casually.

Minutes later, the three of them were once again sound asleep.

Thus the trip went. Carson found a piece of paper and a pencil stub in one of his pockets. With the aid of Nora's watch, he managed to keep track of the days as they passed slowly.



Carson smashed recklessly at the first Mercurian. (Chap. IV)

Constant observation through the four windows showed the three space travelers nothing. The sun appeared to be straight ahead of them, but its fierce glow was cut off from their eyes by the bow of the ship. As time went on, however, there was noticeable a slight rise in temperature.

TO break the monotony, Carson began impromptu lectures in astronomy. He and his pupils came to speculate on whether they were destined to land on Venus, meeting the planet as it drove forward on its orbit around the sun.

By this time, they had all got over their former feeling of anxiety, and were more like their usual selves. Haines showed signs of wanting to be boss again, and Carson was forced to tell him politely five separate times to go to the devil. It was just like old times.

After the tenth day, although there was no sign the ship was decelerating, the temperature stopped rising. Carson knew that this was not very significant. The surface of the ship was probably an excellent reflector of light and heat, and the total amount of energy absorbed from sunlight would not be so great as to put a strain on the vessel's automatic air-conditioning system.

About the twentieth day, the temperature dropped for several hours, and then began slowly to rise again. Carson figured that they were probably passing through the shadow of one of the inner planets—either Venus or Mercury.

His ideas were confirmed the next day when he experienced a new sensation. Like everything else that was not tied down in the ship, Carson began to fall gently to the right. An enormous cloud-covered sphere came into view.

That would be Venus, he decided. He wondered whether they were going to land there; but after a day in which the gravity increased slowly, it reached its peak, and then began to decrease again. Two days later the gravity was so faint as to be undetectable.

That meant that their destination was Mercury. The planet closest to

the sun, the planet where there was no atmosphere to absorb the fierce rays that beat down upon it.

Carson knew that astronomers had calculated the hottest temperatures on Mercury, and he began to perspire at the mere thought of what they had found.

It was about three hundred and fifty degrees Centigrade on Mercury.

Carson looked at Haines, saw that the man's face was gray with worry.

"It looks like it's Mercury we're headed for," Haines muttered.

Carson nodded, sweat breaking out on his forehead.

"We're liable to freeze to death," Haines said weakly.

"What?"

"Mercury turns on its axis once in eighty-eight days, the same rate at which it revolves around the sun. You told me so yourself. That means there's a side that never gets the sun's heat at all. No life can exist there, Carson. And that seems to be the place we're headed for."

Carson hadn't thought of that. He had forgotten the fact that Mercury always kept the same face to the sun. There was not only a hot side, but a cold side. Instead of being fried to death, they might have an alternative. They might freeze.

He saw the shadow of fear on Nora's face, and tried to reassure her.

"Don't worry," he said. "Nobody has taken the trouble to bring us all the way from Earth, just to let us die the minute we get to our destination. We'll be taken care of."

But his mental fingers were crossed. On the thirty-eighth day out from Earth, the temperature dropped again. They were in the shadow of Mercury.

Now they knew, thought Carson. They were probably headed for the cold side and would have the pleasure of freezing to death. After all, Carson somewhat preferred that to frying.

During the following day, the temperature dropped slowly. And then the roar of the motors, this time in reverse, became audible again, and the ship began to decelerate. Now the artificial gravity of deceleration pushed them toward the ship's front walls.

"We'll know soon," Haines said thickly. "Either way, it's all up with us."

Carson didn't answer him, but he was thinking the same thing.

The minutes passed slowly. After about ten hours, they could feel the deceleration becoming apparently more intense. And then there came a slight shock, and all was quiet.

"But we're still decelerating!" Nora said in bewilderment.

CARSON shook his head.

"No. That downward force you feel is no longer due to deceleration. It's gravity, the gravity of a planet smaller than Earth."

The force of gravity shifted from the front of the ship to the side. They were settling down.

"I thought they'd be coming to get us," Haines snapped nervously. "What are they waiting for?"

Carson was looking out the window. He saw nothing but a vast and apparently barren landscape, studded with tall sharp rocks that gleamed brightly in the sun. He had expected it to be dark. There was no sign of life.

"Do you think they're human?" Nora asked. "I—I wonder what they look like."

"Whatever they're like, why don't they come and get us?" demanded Haines, his voice rising suddenly. "They went to a lot of trouble to bring us here, and now—now they don't seem to want us!"

"I don't know the answers any more than you do," Carson said unsteadily. "What's bothering me is the question of what's going to become of us when we get out. I can see the sunlight reflected from the rocks, so that it seems we're on the hot side after all. How are we going to keep from being broiled alive?"

There was still no sign of life outside. As the minutes dragged on without apparent end, their nervousness increased. Then a slight scraping sound came to their ears. The opening at the top of the vessel had come into existence again. The sun poured through it into the ship, flooding them with golden light.

Carson moved toward the light and then stopped, choking. Even while he gasped for breath, he realized what had happened. The atmosphere outside was at very low pressure, almost low enough to be called a vacuum. The air from the ship had started to rush out the moment the ship had opened up, and was now too thin to breathe.

Carson tried to take another step forward. He collapsed, fighting desperately against the blackness which was trying to overwhelm him.

CHAPTER IV

Reception Committee

ALONG with Nora and Haines, Carson found himself in a small room, lighted in the same indirect manner as their ship had been. The important thing was that he could breathe without difficulty. But he was as curious as ever with regard to the creatures who lived on this inhospitable planet. So far, he had not yet set eyes on any one of them.

Then a door opened, and something alive stepped into the room. The greater portion of its body was clothed in a transparent metallic garment that reminded Carson of the diver's suit he had seen entangled about that shark. Even two long arms, attached to the body at what corresponded to the stomach of a human being, each with a three-fingered hand at its end, were within the metal. But the head, or what seemed to be one, appeared outside the suit.

"It's time you got here," grunted Carson. "What do you want of us?" Then his eyes narrowed. "That helmet!" he cried excitedly.

"What of it?" growled Haines.

Now that he had met the Mercurians and nothing unpleasant had yet happened to him, he had regained most of his composure.

"It's of the same type as the one I saw on that shark!"

The creature seemed to regard him without moving. Carson studied it carefully. The sharp-pointed thing Car-

son had taken for a head reminded him of the famous circus freak, Zip, the What-Is-It. He could detect no eyes, and nothing that resembled a mouth, nose or ears. For all he knew, the head might just as well have been an ornamental topknot that served no useful function.

Then Carson got a shock. The topknot lifted, and between it and the metal-encased body, three eyes, set in a semi-circle, could be seen studying him in return.

Still the creature made no sound. It stood on two legs, and for all the peculiar nature of that topknot, the thing had a strange appearance of humanity. Then slowly an image formed on its helmet. The image, strangely enough, was of three Earth people, their faces queerly distorted, as if seen through the eyes of an artist who did not regard them as human.

They watched the image breathlessly. To the three figures that represented the Earth trio was added a fourth—that of the creature in the room. This last figure turned, and the other three followed it. Then the scene changed. All four were suddenly traversing a rocky landscape.

"What the devil is this about?" asked Haines in bewilderment.

"It seems to be a kind of language," returned Carson slowly. "I think he's telling us we'll have to follow him outside. The thing that gets me is how the image is formed."

"It seems to be projected through that helmet," observed Nora.

A new image had formed, this time on the wall. Despite the grotesque distortion, it was easily recognizable as that of Carson. Now the image of Nora appeared beside it. And as they watched, both images began slowly to waver, to lose some of their characteristic features. They ended up as the same thing, a sketch of a man or woman such as a talented child might draw.

"I don't get it," said Haines.

"Don't you see?" Carson exclaimed eagerly. "It's a human being in general. It doesn't refer to you, or me, or Nora. It's an ideograph—a symbol, if you like, for Man."

The ideograph disappeared. The

images of three Mercurians took its place. They differed slightly in size, in the color of their topknots—one blue, one green and one purple—and in minor details which the three humans did not at once grasp.

THE Mercurians went through the same process of change as the other figures had done, ending up temporarily in three slightly different symbols. As Carson and the others stared, all three symbols were transformed into the same thing.

"It's so obvious!" Nora cried out. "There are three races of Mercurians. Our friend, here, started out with three individuals of different races, gave us an ideograph for all three, and then gave us the ideograph for a Mercurian in general."

Carson nodded vigorously.

"The beautiful part of it is that the final ideographs resemble the original images, so that they're easy to remember. And even if we start out completely ignorant of the language, we can probably learn how to express abstract ideas in a few hours. It's better than a spoken language. But I still don't see how they manage it."

The image on the wall represented Carson once more. Carson was shown as lying down and falling asleep. Then a Mercurian approached, a set of instruments in his hands. He leaned over the sleeping man and cut slightly into his skull.

Now he inserted a pair of tiny objects whose nature the Earth trio did not understand, and bound up the incision he had made. Finally the figure of Carson rose—and now it too projected an image within the original image!

"That answers my question, all right," Carson said. "The Mercurians are operated on so that the thought-impulses of their brains are translated into what I suppose are electrical impulses, and then into light. And they're going to operate on us, so that we can answer them in their own language."

"But it's dangerous!" Haines muttered. "Do you think we should let them—"

"Don't be a fool, Haines. We're not

going to have any choice."

The Mercurian appeared to feel that he had demonstrated enough for the time being. Now he pounded on the floor with his foot, and two more of the creatures entered the room. Unlike the first, whose topknot was green, theirs were blue. They too were clothed in transparent metallic garments, and they carried others, apparently for their human guests.

Carson took one of the strange garments from the hands of the nearest creature, slipped into it. The material, he discovered, was elastic, and enclosed his body snugly without being too tight. There was a bulky cylinder built into the back, and he surmised that it contained oxygen.

On Earth, its weight would have been in the neighborhood of fifty pounds. Here, Carson could carry it for hours without tiring. The top portion, for all its metallic glitter, was as clear as glass, and Carson could see as well as before he had put it on.

Nora and Haines put on their own helmets, and then the creature that had first entered started for the door. He paused for a moment as if waiting for them to follow him, then continued on his way again. He moved his feet alternately, but with a curious hopping motion. Behind the three humans, the other two creatures brought up the rear.

They passed directly from the room in which they had put on the helmets, into what would have been called on Earth the open air. But here, as Carson knew, there was no air that he would have been able to perceive. The

Mercurians made an adjustment to their air supply. Apparently they had to remember to keep their oxygen at a constant density.

The disk of an enormous sun was less than half-visible, most of it being hidden behind the bare rocky cliffs that stretched up from the horizon. What there was, however, had none of that softness that the sun possesses at twilight on Earth. With only the faintest of atmosphere to absorb and scatter its light, the glare was more intense than Carson had ever found it back home at noon.

IT WAS warm, but he was in no danger of frying to death. That was the important thing. He wouldn't freeze, and he wouldn't fry. All the same, Mercury did have a hot side, and a cold side. He hadn't made a mistake about that. But apparently they were on neither. Apparently—

Then Carson knew the answer to what was puzzling him. He was a fool. He had overlooked the fact that there was a Twilight Zone. Because of the wobbling of the planet on its axis, there was a small zone whose day and whose night were each equal to half a Mercurian year in length. That was where they were, in the Twilight Zone, the only portion of Mercury inhabitable by human beings.

The soil was apparently barren, the green of vegetation totally absent. All about them, Mercurian creatures were passing along with that strange hop-like gait that Carson had first noticed in the one who acted as his guide. He

[Turn page]



could see on each side of their chests the double row of slits that evidently served as lungs.

These slits had the same restless motion Carson had observed in the gills of fishes. It was obvious supplemental quantities of the rarefied air were necessary for breathing, and that the concentrated oxygen of which the human beings had need would have been deadly to the Mercurians.

Hence the additional use of the helmets in the air-filled room. They had been used to lower the pressure so that the Mercurians could breathe.

Off to one side, the sun's rays hit a huge gray object and were reflected into Carson's eyes. It was the spaceship by which they had reached Mercury. He saw Nora make a step toward it, then stop in alarm as three of the Mercurians threw themselves at her.

Carson knew what had happened. The Mercurians had misinterpreted her motion toward the ship, believing that she intended to escape. Carson's jaws clamped shut grimly, and he launched himself forward to Nora's aid.

It was a giant leap he made, of at least eighty feet, and he hit the first Mercurian while he was still in the air. The creature fell to the ground and lay motionless, and then the second one collapsed.

After that uncounted numbers swarmed over him. Their muscles, accustomed to fighting against Mercury's lower gravity, lacked the strength of Earth muscles, but none of them seemed to know what fear was. When one was knocked down, there was always another to take his place. Carson lost sight of Nora, and the world to him became nothing but a tangle of whirling, sinuous arms and rushing bodies.

He knew he was lost when he felt the first arm reach for the oxygen tank in his helmet. He turned around quickly, scattering Mercurians in all directions, but the damage was done. The oxygen was shut off.

He gasped for breath, fumbled for a moment for the oxygen valve, and then went down under a rush of bodies. After that, everything disappeared in a maze of dazzling, exploding lights.

CHAPTER V

Lessons

WHEN he came to, Carson saw the spaceship again. It was unbelievable, but he was back on Earth once more, and he could see the spaceship plainly, floating on the ocean, waiting for him and Nora and Haines to enter it and be kidnaped to a distant planet.

His mind was not clear, but he was certainly awake, and he smiled cannily. They were not fooling him this time. He knew too much for that. His work on Earth was too important. Calamity threatened, and only he and the others could prevent it.

The spaceship became unaccountably blurred, as if a cloud had drifted before it, and then it vanished. Carson realized suddenly that he was lying on his back, no longer wearing a helmet. He was in an oxygen-containing room again, and both Nora and Haines were gone.

Looking down at him was the Mercurian who had led him on the tour of inspection. Raising his hand to his head, Carson learned that his skull was bandaged.

He wondered what they had done with Nora, and an image of her appeared on the ceiling of the room. He stared at it incredulously. The spaceship, Nora—these had been only his own thoughts. The Mercurians must already have operated on him then.

With this new thought, the image of Nora disappeared, and that of himself in an operating room such as he had seen in hospitals on Earth took its place. But they couldn't have operating rooms like that here.

Carson stared at the image for several seconds before realizing what was wrong. When he thought of an operating room, he thought of the kind he was accustomed to. To transform that image, he'd have to think consciously of a room such as the one in which he was now resting. He concentrated on the room, and slowly the image changed.

Presently the Mercurian began to "talk." Interpreting the images, Carson could translate into words without the slightest difficulty.

"The girl intended to escape," the Mercurian was "saying."

"No," Carson thought. "She was curious about the spaceship, and was going to ask you a question."

He racked his brains for a moment, then projected a picture of Nora stepping toward the spaceship. The Mercurian seemed to understand.

Excited, Carson next projected a picture of himself in the room. He let the scene grow dim and uncertain. At the same time, he imagined the sun, with a planet circling about it, to indicate the passage of time.

"What's going to become of me?" all this was intended to mean.

Again the Mercurian understood.

He projected a picture of Carson in that same room, studying a series of ideographs. Carson as a human being was going to be taught the "language," so that he would be able to communicate in a less roundabout manner than was now possible.

"Good idea," said Carson enthusiastically. "Let's make it snappy."

And so the lessons began.

His teacher's name, Carson learned after a few hours, was an ideograph that resembled the one for "door." In sound, it might be translated roughly as "Dorn."

"Where is Nora?" was one of the first questions Carson asked.

But he received no satisfactory reply. That was apparently a subject his teacher was forbidden to discuss.

"Why was I brought here?" Carson demanded then.

Dorn raised the topknot that served him as a head, seeming to listen. To Carson, the gesture at first appeared absurd, for he knew that the Mercurian sense of hearing was not well developed, and the Mercurians did not rely on it.

Then he realized the purpose behind that watchful attitude. The Mercurian was not listening, he was *looking*, giving his three eyes as wide an angle of vision as possible. It was as if he were being wary of something.

He had been ordered not to tell, thought Carson. Carson repeated the question, and this time the Mercurian answered hesitantly.

"You were brought because we needed you. I can not explain why."

"I see," Carson nodded. "You are afraid."

The Mercurian protested.

"No, I have no physical fear. That is almost unknown to us. But I must not disobey orders. I am a scientist, a member of the green race, and it is my duty to obey."

"And whose duty is it to command?"

"The blue race, and above them the purple," Dorn replied.

"What will happen if you disobey orders?" Carson said curiously.

The Mercurian's eyes were uneasy again.

"I must not think of it. Sometimes those of the lower ranks have dared to plan a revolt—" He caught himself suddenly. "The king will tell you everything. Ask me no more."

"But you are to show me your world," Carson persisted.

"Some of it," Dorn admitted.

"Why?"

"So that you may be of use to us."

THAT was all that Carson could get out of him.

The food the spaceship had brought from Earth had by now been exhausted. When next Carson had to eat, it was Mercurian food that was offered him. It was dark red and spongy, and as far as appearance was concerned, hardly appetizing. Carson felt a certain nervousness as he prepared to take his first mouthful.

He tasted a portion cautiously. It seemed flat, but not as bad as he had feared. He stared at Dorn, who was watching him anxiously, and then took another mouthful. So far there had been no ill effects. He began to eat steadily.

Carson finished his meal unharmed, and returned to his lesson in ideographs. During the next few hours, he found the Mercurian staring at him doubtfully every now and then, as if expecting him to drop dead. But nothing of the kind happened.

It could not have been many days later when Carson was told that the first stages of his education were complete. An oxygen helmet was brought to him, and he was conducted once more out of his small air-filled room on to the planet's free surface.

Carson, shading his eyes with his hand, lifted them toward the sun. On Earth, the sun would have moved several times across the sky since he had first seen it. Here on Mercury it hardly seemed to have changed its position at all.

As he lowered his eyes, dazzled by the sun's brilliance, Carson's attention was attracted by a slight rustling sound at his feet. He looked down. Something that resembled a small fish slid by on a dozen short legs, the gill-like lungs along its sides opening and closing even more rapidly than those of the larger species of Mercurians. As the creature passed them, Dorn bent down and scratched its head gently with the three fingers at the end of one arm.

Carson stared after the creature, wondering whether it could serve any useful purpose. Then his attention was abruptly drawn back to his teacher, who had seized his arm and was pointing to a huge rock, at the same time projecting forcefully the ideograph "Danger!"

There seemed to be urgency in Dorn's gesture. Then, seeing that the Earthman was in doubt as to his meaning, Dorn threw himself flat on the ground behind the rock. "Come here!" he continued to signal.

"Danger!"

As Carson hesitated, the ground seemed to heave under him. The noise of a distant explosion rose from the rocky soil on which he was standing, vibrating through his body and smashing against his eardrums.

The noise ceased, and for a moment nothing seemed to happen. Then the sun was blotted out as if by a giant eclipse, and a shower of stones began to fall around him.

Carson eyed them curiously. They fell slowly, as was natural on Mercury, but some of the fragments were as big as Carson's head and could have smashed him to a pulp. He understood

now why the Mercurian was sheltering himself from them. As the fragments spread from their original source, the sunlight came through them again, and they glinted with all the colors of the rainbow.

A piece the size of his fist came directly toward Carson, and he reached up and trapped it. It stung like a fast-pitched ball caught without a catcher's mitt. Seen close at hand, it was very much like the gray rock under which Dorn had sought shelter. Something had caused one of these rocks to explode, something unintentional and undesired, but with plenty of power behind it.

OBVIOUSLY these Mercurians, then, were living in constant danger of such explosions. And they couldn't get away; they had only the Twilight Zone to live in. Carson's eyes grew thoughtful. Was this one of the reasons he, an engineer, had been brought to this planet?

The shower of stones diminished in intensity, came to an end. Dorn rose to his feet. From beneath that topknot of his, the Mercurian's three eyes stared with wonder at the Earthman. Dorn was plainly puzzled because Carson had run a senseless risk. Maybe he considered this first specimen of a human being he had seen to be stupid.

As they walked along, passing Mercurians from time to time, Carson continued to examine the landscape that spread before him. He had made a mistake, he decided, when he had concluded there was no vegetation. There were things that looked like plants, but they were small and black instead of green.

Well, it was wrong to feel that all plant life must be based on the possession of chlorophyll. Even on Earth that wasn't true. And here on Mercury, with the sunlight so strong and so little carbon dioxide in the air, perhaps green plants couldn't exist. They might have absorbed too much sunlight for their own good.

Reminded by a chance remark of Dorn's about the spaceship, Carson noticed once again the thing that had struck him almost at his first view of

the Mercurian countryside. Except for the oxygen chambers in which he himself could slip off his helmet and relax, there was no sign of any buildings that had been constructed by intelligent people.

Because of the thinness of the atmosphere, there could of course be no rain or snow, no storms, and consequently no need for protection against them. All the same, the Mercurians might have been expected to find some use for places of rest and shelter.

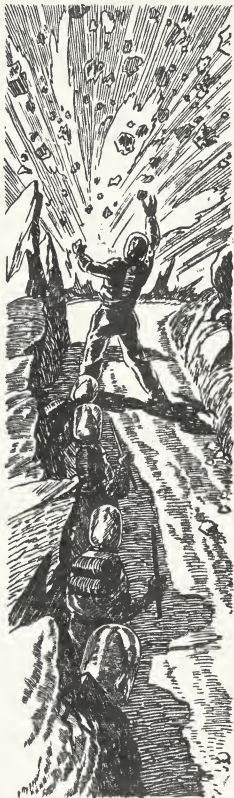
As for the oxygen chambers, the very existence of these compartments only added to the mystery. Obviously they had been constructed for the sake of Carson, Nora and Haines—but put up before the human beings had reached the planet. The Earth people's presence, Carson decided, must have been greatly desired by the Mercurians.

Lost in such thoughts, he tripped over a small black rock that was almost invisible in the deep shadow of a larger boulder. He caught himself in time to keep from falling, then noticed that Dorn had stopped walking and was staring at an advancing object. At the same time, the ground began to tremble. Carson, looking up, thought at first that a mountain had begun to move.

It was not a mountain, however, but a living creature somewhat like a dinosaur, as a second glance showed him. Its dull, scaly covering gave it a rock-like appearance. The thing was about fifty feet in length, and about a third that in width and height.

Except for an elongated neck and a relatively tiny topknot, such as the human-appearing Mercurians possessed, the major portion of the creature's body appeared to be a single undifferentiated mass of what Carson supposed to be flesh.

There were six short legs that could hardly have supported the weight of so huge an animal on Earth, but were quite sufficient here because of the lesser gravity. And set in the topknot's forehead were hideous eyes, four of them in a semi-circle, glaring viciously.



A shower of stones fell toward Carson
(Chap. V)

As Carson stared back at it in curiosity, it charged straight at him and a group of nearby Mercurians.

CHAPTER VI

Underground

DORN was as motionless as if he had been paralyzed. Carson, moving at a speed that he himself would have thought impossible, pushed the Mercurian out of the way so violently that he sent him sprawling. Then he leaped.

He was thankful now that the gravity on Mercury was only a quarter of that on Earth. A single bound took him to the back of the animal. He had no idea where the vital spots were, and no time to seek for them. As the animal swerved in pursuit of the frightened Dorn, Carson acted almost instinctively, reaching around under the thing's topknot and groping for its eyes.

The forward rush came to an abrupt halt. A convulsion took place under Carson, and the next moment he was thrown clear twenty feet to one side. The beast opened its mouth in a soundless roar and plunged forward again, after the Earthman this time.

Around Carson the Mercurians were projecting frantic messages. Carson had no time to try to read the orders they were sending him. He barely managed to sidestep the second rush; then as the animal turned clumsily to face him, he leaped to its side again.

He had discovered, if not a vital spot, at least a point of attack that looked promising. Along the animal's back were two rows of the lung slots needed to extract oxygen from the thin Mercurian air. Beneath these were undoubtedly organs that corresponded to the nerves of animals on Earth. If these could be paralyzed—

Carson's fist pounded along one row of slots, almost sinking out of sight into the soft flesh. He could feel the thin flaps struggling desperately under him, while the whole animal trembled with its effort to throw him off. But Car-

son held on, his fist rising and falling. And gradually, the movements of the beast became slower and less convulsive, and then ceased altogether.

A big Mercurian who had been in the line of the thing's attack was forming rapid images.

"Get off, it is harmless now!"

The fellow was in a rage, thought Carson, because his life had been saved! There was no trace of gratitude, either in his manner or in his ideographs. Carson leaped to the ground.

"You almost killed it!" the Mercurian charged.

"It was doing its best to kill us," Carson replied heatedly.

"It was frightened by the sight of you. It had never seen anything like an Earth-being before."

The Mercurian's eyes were cold. And in the middle eye, the one that was most likely to betray emotion, a new feeling was visible. The Mercurian hated Carson. He was filled with envy because the stranger from Earth, without the aid of weapons, had almost killed so huge a beast. No Mercurian would even have imagined himself doing such a thing.

"Why do you want the beast kept alive?" Carson asked.

"It is food," Dorn told him.

"So that's the thing I've been eating!"

"It would have been wasteful to kill it now. It is only half grown."

Carson nodded in understanding. On this almost desolate planet of Mercury, half its surface at a temperature close to that of liquid air, and most of the other half above the melting point of lead, both plant and animal life must be exceedingly scarce. A large specimen of a food animal, such as this one, must be exceedingly valuable.

But he himself, Carson knew, was for some reason also valuable to the Mercurians. The struggle between him and the beast had put these strange people on the spot, helpless to interfere without harming him or the animal.

He and Dorn walked on. Half an hour later, Carson found himself entering an underground passageway.

* * * * *

MEANWHILE, the unfriendly Mercurian with the purple topknot had entered a private room. Here sat the Mercurian king, and he was not to be disturbed. The other man waited patiently for his sovereign's permission to speak. But it was not until he had been waiting for a quarter of an hour that the king turned to him. Then several ideographs formed slowly.

"What have you come to tell me, Lokan?"

"The third stranger from Earth is approaching. He is physically very strong, and will have to be watched with care."

"I have my guards."

"He has been told nothing of the reason why he was brought here," Lokan reported.

"I shall tell him myself," the king said.

"But he is stubborn. If he learns that you intend to exterminate the other races, he may refuse—"

Lokan stopped abruptly at the look in the king's eyes.

"He will not be able to refuse. Nevertheless, it will be best not to tell him everything. I shall let him know only that we intend to remake the planet. He will not learn that the hot side is inhabited by our enemies."

"He must not be permitted to leave the Twilight Zone."

The king nodded in assent.

"As for the other two from Earth," Lokan went on, "they have already been permitted to discover too much. They are suspicious of your real purpose. They suspect that eventually we shall try again to build spaceships of our own, perhaps even conquer their own planet."

"That will not be possible for centuries. Nonetheless, the thought had entered my mind."

"It will be necessary for these two to be destroyed," Lokan suggested.

The king did not answer at once.

"Have they been studied?" he asked finally.

"We have learned much about them. They do not have three castes, as among us, but they do have a division into two groups for purposes of reproduction, as is the case with some of our

lesser animals."

"Then they do not reproduce by budding, as we do?" said the king.

"They claim they do not. They believe that only plants bud."

"If we ever do attempt to invade their planet, this knowledge may be useful. Is there anything else?"

"There are many other things," Lokan told him. "They do not live, as we do, largely underground and scattered in very small groups. They come together in large cities on the surface."

"That we had learned before. They will be the easier to destroy," declared the ruler.

"There is a peculiarity about their body temperature," Lokan went on. "It remains almost constant and does not change as ours does, according to the surroundings. Accordingly, their span of life does not increase with cold and decrease with heat, but remains the same under all conditions. In contrast to us, they have a well-developed sense of hearing. Moreover, they possess something called blood—"

"These things are details, not at present important," the king interrupted. "Do you think you have learned from them as much as you can?"

Lokan nodded.

"Then let these two be destroyed, at the next ceremonial connected with the setting of the sun. Now send in the third from Earth."

"The guard must be ready for him," Lokan cautioned.

"It will be ready, but I think he will attempt nothing. Go, Lokan."

CHAPTER VII

Help Wanted

THE moment Carson set foot in the underground passageway, he realized that the fact of its existence was precisely what he should have expected. Any people that could build a spaceship were also capable of building for themselves shelters immeasurably superior to those of Earth.

All the passageways here, Carson

soon discovered, were lighted in the same indirect manner that had puzzled him on the spaceship.

For a moment he had the wild hope that he would find Nora again somewhere in the complicated passages. But the hope died quickly. He was being taken as a prisoner to meet the king of the Mercurians.

When he had been underground for an hour, Carson came across something that confounded him completely, something for which he could think of no reasonable explanation whatever. This was a large gray-walled chamber that obviously served as a museum. It was filled with objects. But—these objects came not from Mercury, but from Earth!

They were implements of war.

There were cannon and tanks and machine guns, and there were primitive flintlocks and huge clumsy revolvers.

An absurd thought flashed through Carson's mind, the thought that the Mercurians were studying Earth's weapons with the intention of conquering it. But he dismissed the idea as soon as it arose.

For several minutes he studied this extraordinary museum, racking his brains as to its possible meaning. But the Mercurians were impatient and hurried him on. Their king was waiting for him.

Carson came to the end of the journey quite unexpectedly. A tunnel opened out into a small room in which there stood five Mercurians. Four had blue topknots and carried in their hands small, pointed metallic rods, of which one end was polished and the other dull.

These rods were the first things Carson had seen that resembled weapons the modern Mercurians might have fashioned for themselves.

The four were obviously a bodyguard. The fifth Mercurian had a purple topknot, and eyes which shone with a cruelty and malignancy such as Carson had never seen equaled on Earth.

This, then, was their king.

Carson stepped forward, and the four guards raised their metallic rods threateningly.

Dorn had been shrinking back from

the time he had first caught sight of the monarch. Now he hastened forward, his manner extremely respectful. He spoke, and the images succeeded each other so rapidly as to be almost blurred.

"This is the other one from Earth. He intends no harm," Dorn assured the ruler.

The king nodded, and the four metallic rods were lowered. He studied Carson as if he were a strange insect.

Carson waited, all his senses alert. Curiously enough, he was not at all concerned with his own fate. Dorn's remark had revealed that Nora and Haines had already been brought here for questioning. As the king seemed disinclined to speak, he himself took the lead.

"What has become of my companions?" Carson demanded.

"Nothing has become of them yet." The king appeared surprised that Carson had addressed him without permission. "Although they are not very important, they have been permitted to live."

CARSON'S face darkened. There was cruelty not only in the king's eyes, but also in his manner of speaking. Carson's eyes swept over the bodyguards. He had no idea of the manner in which their rodlike weapons were used, but once he found out, he was determined to secure one for himself. He was physically stronger than the Mercurians, and he could move faster. And if they decided that he himself was not "very important," he would quickly change their minds.

"Why were we brought here?" Carson asked. "Why did you go to the trouble of sending a ship to Earth in search of us?"

"We have need of you. You have learned to do things we can not," the king conceded.

"If you can build a spaceship, you can do anything the people of Earth can do."

"That was true once." The king nodded. "But we ourselves can no longer build spaceships. Those we possess were handed down to us from past generations."

Carson shook his head.

"That doesn't sound reasonable. You still know how to use the ships."

"It requires little skill for that," the ruler told him. "The secret is in building them, and that secret was lost almost a million Mercurian years ago."

The monarch paused, regarding Carson curiously.

"In those days, Mercurians visited Earth, and found it lacking in beings of any intelligence. Moreover, its atmosphere was so dense as to be poisonous to them, and its gravity made living painful. They therefore avoided it.

"But later, there were signs that intelligence on Earth had begun to develop. Once the Earth creatures had learned the possibility of science, they advanced much more rapidly than we had done, for they had one great advantage over us. We have decided to make use of them."

"What was that advantage?" Carson said.

"Length of life," the king replied simply. "Originally, our race lived as much as forty Mercurian years. Then we increased in numbers and began to spread over the planet. But as we could live neither on the hot side nor on the cold side, we went underground. Here we could control the temperature to suit ourselves.

"Our ancestors were the ones who built this underground world, and having a mastery of science that we no longer possess, they built it to endure for unnumbered years."

"How did they lose their knowledge?" Carson persisted.

"There were radiations underground that caused a gradual change in the Mercurian race. Now, in the Twilight Zone, our lives usually extend no more than fifteen of our years. But that is not long enough for a scientist to master any single science completely. As a result, it became impossible some time ago not only to acquire new knowledge, but to hand down the old.

"The race was now too numerous for more than a small portion of us to live above ground, in the Twilight Zone. We tried to live on the hot side, and died. We tried the cold side, and succeeded no better. Then because of our difficulties, there arose a dif-

ference of opinion, and finally a war, which succeeded in destroying most of those who had any useful knowledge left from the past.

"Once the war had ended, there was room to live in, but as we increased in numbers again, the problem returned. Living underground will yet be fatal to us. But above ground there is not enough room for us and our food beasts, and the plants these need to feed on."

"Then that's your problem—living space," Carson declared.

The king nodded.

"It is you who must help us solve it," he said deliberately.

"I? How?" Carson started in surprise.

"That is for you to say. What you must do is equalize the temperature of our planet. If you could use the heat from the hot side, and transfer it to the cold side—"

"Why can't you do that yourselves?" Carson demanded.

The king explained patiently.

"Because we do not live long enough. Such a vast project requires long and careful planning. By the time a Mercurian has the necessary knowledge, he is of an age to die. It is true that he can write down what he knows, but he can not transmit his skill. That takes one of our lifetimes to acquire.

"You, however, live twenty times as long as we do. When I and all those now about me are dead and forgotten, you will still be alive, carrying on the work."

HE PAUSED, and his three eyes examined Carson steadily.

"How do you know I have the ability to do what you ask of me?" the Earthman asked.

"I am not certain about you, but I know that somewhere on Earth there are people who have the ability. This is not the first occasion on which we have sent a ship to your planet to secure aid. Several hundred years ago our messengers returned, reporting that the dwellers of Earth had learned the use of explosive substances.

"Since that time, other messengers have brought back specimens of the weapons your people have made. We

knew that it was only in warfare that you used all your scientific knowledge, and we decided that a study of your instruments for dealing death would best indicate how far your science had progressed.

"From the latest reports, your science is sufficiently advanced to deal successfully with our problem. As for you personally—" the king paused again and this time Carson could feel the glance of every Mercurian in the room—"our messengers were ordered to make a study of large engineering projects, and to bring back those in charge.

"They chose you and the other two Earth-beings. The short one does not have sufficient ability, though we were not wrong in considering her a scientist. The tall one is likewise useless to us. We must therefore rely upon you."

Carson laughed in amusement. In the thin atmosphere, he realized, his laughter must have seemed to the Mercurians only a soundless and puzzling contortion of the face, but he couldn't help himself. They hadn't known what a woman was, and they had at first mistaken Nora for a member of a human race distinct from his own.

"We weren't chosen by your messengers," he said. "We wandered into your spaceship by mistake."

"It was no mistake," the king declared. "Our messengers did not return, possibly unable to survive the heavy gravity of your planet and its poisonous concentration of oxygen. But they had been in communication with us, and they left a report of what they planned to do.

"They knew that if their ship were discovered near where you were working, only someone in authority would dare enter it in order to investigate. The controls were arranged to start when you attempted to examine what looked like a message.

"Once the ship was in motion, we controlled it from this planet."

Carson considered.

"What will happen if I am unable to solve your problem for you?" he asked.

The monarch's topknot bent slightly, almost hiding the cruel glint in his eyes.

"In that case, you will no longer be important to us."

That was clear enough, thought Carson. Failure would mean death. But even if he succeeded—

"What if I do solve the problem?" he asked.

"You will be honored among us."

Carson laughed again, soundlessly, puzzling all the creatures that stared at him.

"That isn't enough for me. I have a problem of my own to solve. You must help me."

"Your problems are not important," the monarch said coldly.

"They're plenty important to me!" Carson snapped. "I was experimenting with a new source of energy, and facing success, when your messengers kidnaped me. Now it's doubtful whether I can succeed in time."

"And if you do not?"

"Then Earth, as I know it, will be practically ended. And I won't give a darn whether I solve *your* problem or not!"

The king stood motionless, while Carson waited. Finally he spoke.

"We can not help you discover a new source of energy. Formerly our scientists could have done so, but their descendants have forgotten too much. There is but one alternative."

"What is it?" Carson said shortly.

"The fuel we inherited from our ancestors is almost gone, and we do not know how to make more. But we have enough for another trip to Earth, and if you solve our problem, we shall no longer need it. You will be returned to Earth along with your companions. You may yet be in time."

Not much chance of that, thought Carson. Even if the king did mean to keep his promise. What the Mercurians wanted done would take years to accomplish.

CARSON stared at the king, trying to make up his mind. Why had Dorn been forbidden to tell him what the king had just narrated? There would have been no harm in his knowing. Why had he not been permitted to see Nora and Haines? Could they already have heard too much?

"An expedition is being sent to the

hot side to secure information for your use," the king went on.

"And I am to go?"

"You are not to go. Your life is too valuable."

All Carson's suspicions seemed to crystallize at once. They didn't want him to get to the hot side. He might learn too much. They just wanted him to stay put, and believe what he was told. Suddenly it seemed of tremendous importance for him to reach the hot side. Perhaps then he would learn what the king's real intentions were.

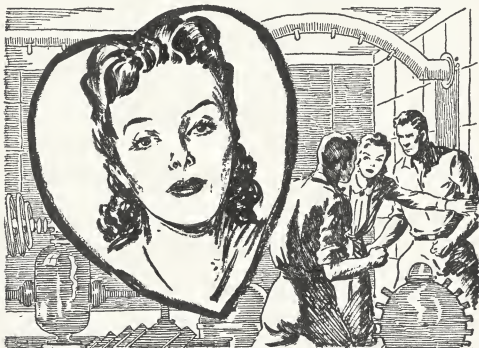
"But your life must not be risked. There are dangers—"

"I shall guard my life. It's just as valuable to me as it is to you."

The king hesitated. Whatever the decision, thought Carson, he must go.

Something touched his foot, and he looked down. Snake-like coils, several inches in diameter, glided across his toes. He leaped back, but the animal appeared to have no intention of attacking him.

It slithered across his foot and then paused in the center of the room, as if



NORA SAYRES

But it wouldn't do to reveal his suspicions. The king would be all the more determined not to let him go. No, he must pretend to accept everything that was told him.

"I have no desire to risk my life," Carson said. "Nevertheless, I have a special knowledge of chemistry at high temperatures, and on the hot side I could learn much. You have pointed out that your own scientists can not even attain mastery of their own sciences. Unless I may go, the expedition will be almost worthless."

trying to decide what to do.

Whatever it was, the Mercurians were uneasy in its presence.

They began to draw away from it, making for the doorway. As the king drew past, the creature lashed out suddenly, wrapping itself around his legs. The others stopped in their tracks, their topknots lifted, all their eyes wide open.

Carson gazed at the Mercurians in bewilderment, wondering at their lack of motion. They seemed painfully undecided. Their arms had risen gradu-

ally, so that the sharp polished ends of the rods that served them as weapons were pointed at the writhing creature. But something prevented them from shooting, despite the fact that the king was appealing frantically for help.

The monarch fell to the ground, and one of the Mercurians finally made up his mind. His hand squeezed the rod, and a glow of light came from the sharp end.

The snakelike creature writhed weakly, and began to shrivel. And as the king rose to his feet, the Mercurian who had saved him turned his weapon on himself, aiming it under the middle eye.

Carson watched the guard collapse, his topknot jerking back convulsively like the head of a man having a fit. The Earthman was beginning vaguely to understand things. These snakelike creatures were for some reason protected by Mercurian law. Perhaps as a result of some superstition, they were considered sacred. It was forbidden to harm them even when they attacked a Mercurian.

When the king was attacked, however, things were different. The superstition came in conflict with the guards' duty to protect him. And the one guard who had come to the ruler's defense, realizing that he had broken an immutable law, had chosen the only way out. Suicide.

The dead Mercurian's body lay where it had fallen, temporarily disregarded. Even the king, who might have been expected to appreciate the guard's sacrifice, let his eyes pass over it with indifference. He indicated to Carson that his audience was over.

Carson turned to leave, and as he passed the motionless body, he tripped and fell. When he rose again, his hand was closed over the dead guard's weapon.

CHAPTER VIII

Escape to Where?

IN ONE of the Mercurians' specially constructed oxygen-filled rooms, Haines paced up and down restlessly,

while Nora watched. After a while, he paused.

"Nora, I'm worried."

"You have been ever since we found ourselves locked in that spaceship," she said tartly.

He shook his head.

"I wasn't just worried then. I was scared. Scared as blazes. And so were you and Carson. Anybody would have been. But I got over that later. Now, however—"

"What do you think is wrong?" she interrupted.

"Everything. We haven't heard a word about Carson. Not that I'm sorry at not seeing that fellow, but it makes things look bad. And since we've had that interview with the king—well, things are different."

"I know." The girl nodded. "As if they were disappointed."

"That's it. They went to a lot of trouble to bring us here from Earth, thinking we could help them. Later they taught us the language, watched over us, acted as if we were valuable. Then this interview—and they find we can't help them after all."

"Now they don't give a darn about us. They don't pay us any attention. It looks as if they intend to get rid of us."

"Nora, we've got to get out of here," Haines stopped his pacing.

"But where shall we go?" she asked helplessly.

"From the way the king talked," Haines said slowly, "it looked as if he had enemies some place. If we could get to them, we'd have a chance of re-maining alive a little longer."

"But how?"

"I don't know. But anything's better than staying here, just waiting to be put out of our misery. They've left us helmets and oxygen tanks. What's to stop us from going?"

"There are guards outside," Nora reminded him.

"Just two of them. I can handle them without any trouble."

"If we could only get in touch with Carson—"

"Still thinking of that guy?" Haines scowled. "And once I thought you were going to marry me. He put his

foot in that, all right. If we ever get out of this mess, I'm going to fix his wagon for him!"

"You'll have to take care of these Mercurians first," Nora said practically.

"Don't worry about it. Put on your helmet."

They drew on their helmets and went to the door. As the first Mercurian saw them emerge, he stared in bewilderment, and then turned as if to run. Haines threw himself after him, caught the fellow around the legs and slammed him to the ground, where he lay motionless.

The second guard had drawn a gun, but was slow in shooting. Haines' fist caught him across the chest and knocked him sprawling.

"That was easy," Haines grunted.

"Where do we go now?" Nora asked excitedly.

"Any place, so long as we get away from here. Let's get moving."

They began to walk rapidly. As the oxygen-filled chamber from which they had escaped grew smaller in the distance, they began to feel more at ease. Evidently, whatever decision the king had come to regarding them, most of the Mercurians were not aware of it. No one paid them very much attention.

"What do they do with themselves?" Haines said curiously. "They all seem to be going places."

"I remember asking the green-topped one who taught us the language," Nora replied. "Most of them are busy in one way or another, trying to raise food. They cultivate plants, and raise those large animals we saw."

THEY came across a group of Mercurians walking together. As Haines and Nora watched them, the Mercurians reached the opening of one of the underground tunnels and began to enter.

"They seem to be going some place," Nora said.

"I wonder—"

In the distance, they could see several Mercurians begin to run toward them.

"Quick, into those tunnels!" Haines urged. "Somebody seems to realize that

we've escaped."

They plunged underground, and caught up with the Mercurians they had seen enter the tunnel. A Mercurian with a green topknot regarded them curiously, but said nothing. They entered a side passage, and then another. Haines was uneasy.

"If we ever have to find our way back alone, we're finished."

"There's nothing for us to do but keep on," Nora said stoutly.

They had been traveling for about a half hour when the group stopped. A Mercurian with a purple topknot came over to them and flashed a series of ideographs.

"Why are you coming with us?" he asked.

"We have been ordered by the king to accompany you," Haines said boldly. The Mercurian hesitated.

"Come," he told them finally.

They followed him.

"Where are we going?" Nora suggested.

"I don't know. But they're out to get us above ground. Our only hope is to go along with this bunch."

"They may be leading us right back to the king!" Nora warned.

"That's a chance we'll have to take. Come along."

The Mercurians they had bumped into went on rapidly, without speaking to them further. Nora and Haines followed.

MEANWHILE, Dorn led Carson through the tunnels to a device that resembled a large wheelbarrow without wheels. It was balanced on a single rail, so smooth that to Carson's touch it felt like oil. Following the Mercurian's directions, Carson seated himself in it, next to Dorn himself, and the barrow moved off down the rail.

It was the first device Carson had seen that involved a means of locomotion other than legs, and he was curious about how it worked.

The Mercurian's explanations were vague. The conveyance had been built long before, at a time when the race still possessed its scientific knowledge. A magnetic charge of the same sign, induced both on the bottom of the bar-

row and on the rail, resulted in a repulsion between them that practically neutralized the device's weight, thus reducing friction to almost nothing. The motive power of the barrow was electric, likewise transmitted through the rail.

A short ride took Carson and Dorn to the surface. In the distance, a cloud of stones leaped into the air, and the vibrations of the far-off explosion rose from the ground to Carson's ears. It was the same thing that had greeted him not long before. He turned to Dorn questioningly.

"What is it?"

"It is a solar rock. No one knows why it explodes."

"Where does it come from?" Carson persisted.

"There are many on the hot side. You may see them later."

Carson received the information with a grunt. Perhaps he had been a little too anxious in his eagerness to make a trip of exploration to the hot side. He had temporarily forgotten about the temperature that was high enough there to melt lead. Now he remembered it, and the mere thought made him sweat. Maybe these Mercurians had the ability to live in all that heat, but he certainly hadn't.

They got out of the barrow, for which there were no tracks above ground. Dorn began to lead the way again, but Carson stopped him. In the distance was the gray hulk of the spaceship in which the Earth trio had arrived.

"I want to find out how that ship works," Carson said.

AT THAT the Mercurian began to argue with him. But Carson, shrugging his shoulders, made for the vessel. It was part of the agreement that he would be permitted to go back to Earth once his job was done. He intended to learn enough right now about the ship's operation to make sure, later, that he wasn't going to be double-crossed.

The opening at the top had not been closed. A short leap took him inside it, and he looked around. Apparently nothing had been changed since he had been there before.

Dorn followed him inside, still protesting. Carson waved him aside.

"The king has agreed that I shall be permitted later to return to Earth in this ship. How is it operated?"

"I do not know," the Mercurian told him unhappily. "It is against my orders to let you come here."

That made it look as if they certainly intended to doublecross him.

"Who does know?" Carson demanded.

"There is one among us, but he is not near."

"I'll wait while you get him," Carson said shortly.

Dorn hesitated, and then left the vessel. A moment after, he returned.

"The one who can operate the ship is coming."

It was almost an hour before the Mercurian foe whom Carson had been waiting finally arrived. He turned out to be one of the smaller variety, a scientist like Dorn.

The front wall separating the driving machinery from the passenger rooms had been kept in place by means of four locks, which reminded Carson of a bank vault. The locks were opened, not by a combination of numbers, but by a combination of lights, some of them of such short wave lengths as to be invisible to the Earthman's eyes. The small Mercurian removed the wall and began to explain the mechanism.

As Carson had suspected, the power that drove the ship was atomic. The hull of the vessel itself was radioactive, in order to operate the meteor-repellent device, but there was an inner layer of metal that shielded the passengers from its radiations. But even the small Mercurian had no idea of what elements were used, nor how they had been obtained.

The fuel was carefully guarded from any possible contact with the passengers, not by a thick wall of lead, as Carson would have imagined, but by a thin sheet of steel-like metal. This developed a charge automatically when the motors were going, of such a nature and intensity as to repel, with exactly the proper strength, all the radioactive particles that shot at it in an effort to get through.

The ship's controls, previously set for remote operation, were now adjusted so as to be handled by a passenger on board. As he learned how to use them, Carson felt somewhat in the position of a driver learning to operate a new-model automobile.

With something like regret, the small Mercurian came to the end of his explanations, and they got out of the ship. Carson was feeling better. It looked as if they didn't intend to doublecross him after all. At least not right away.

Dorn was speaking to him again. He was going to get ready for the trip to the hot side. An expedition was already being organized, had in fact been in preparation ever since the Earth people had set foot on Mercury. The Mercurians would start in a few hours, whether Carson went along or not.

CARSON started to answer, but at his first ideograph, there was a flash of light, and then an explosion of such terrific intensity that both he and Dorn were thrown off their feet.

The front of the gray spaceship, impervious to the most rapid of meteors, had been stove in as if it were of the flimsiest human-made materials!

A yard or so in front of the ship, a gaping hole more than a hundred feet across yawned in the rocky ground. In the distance, a shower of stones was falling.

Carson stumbled to his feet and rushed for the ship. A single glance told him that the driving mechanism was ruined. It would be impossible to repair. The small Mercurian scientist had already made that clear, and from what Carson had seen of the atomic motors, he believed him.

"What—what happened?" he stammered.

Dorn did not answer, and Carson realized suddenly that he himself was talking after the human fashion, moving his lips, instead of using the Mercurian ideographs. He must have been badly shaken to forget himself so completely.

He made use of the ideographs this time.

"What happened?"

"It was a solar rock," Dorn replied.

"But why did it explode now? You must have set it off!"

"No one can predict when such a rock will explode," Dorn explained patiently. "It must have been under the ship, unrecognized."

"Where are your other ships?" Carson demanded fiercely.

"There are no others."

"There must be!" Carson began to sweat.

"There are none," insisted the Mercurian.

"I don't believe you! Your race must have constructed more than this one!"

"The ship to Venus was destroyed on the way back. The one to Mars reported it was having difficulty rising from the surface of that planet, and then was heard from no more. There have been rumors of still another ship hidden on Mercury, but no one has ever seen it.

"Some of us believe it does not exist."

CHAPTER IX

The Hot Side

AT ANY rate, Carson was to go with the expedition. The king had made up his mind at the last moment.

The expedition approached the hot side of Mercury through the underground passageways. It was miles past the limits of the Twilight Zone before the underground system came to an end, and it was necessary to ascend to the surface. The temperature had been rising gradually; but as long as they remained underground, they had not been forced to put on their insulated clothes.

The Mercurians had a peculiar form of rough thermometer, which consisted essentially of a series of strips of different materials, visible through a transparent covering. As the temperature rose, first one strip and then another would melt.

Carson noticed that the series of materials did not go further than lead. But molten lead, he felt, was hot

enough for him, even if he was encased in insulated clothing.

The temperature was not far below what would have been, on Earth, the boiling point of water, when they paused at the edge of the great Mercurian desert on which the sun never set. So far, strangely enough, they had suffered little discomfort. The low pressure, and the absence of water vapor in the atmosphere, had combined to make the heat less oppressive. Neither Carson nor the Mercurians had been greatly conscious of it.

There were twenty-six in the expedition beside Carson—twenty-three of the two-legged Mercurians, and three of the small dozen-legged fish-like animals. These latter were especially sensitive to the poisonous gases which were occasionally emitted by the desert rocks, and they would give warning of the gases' presence. They too had their insulated garments.

Except for their clumsiness, Carson found his insulated clothes easy to move in. Complete with a refrigerating unit good for many hours of service, the outfit would have weighed on Earth about two hundred and fifty pounds. His oxygen apparatus was another fifty pounds, and his own body about two hundred.

That meant a total of five hundred pounds on Earth; or, taking account of the lesser Mercurian gravity, about a hundred and twenty-five here. With all the weight that was piled on him, he was still lighter than he would have been on his home planet.

To the Mercurians, however, with their less powerful muscles, the weight of the suits was no trifle. They could move only slowly and painfully, dragging their feet along as if they were chained down. Even the fishlike animals crept along as if they had been half paralyzed.

From the edge of the desert on, the pace of the expedition slowed down to a crawl. Carson, staring out at the barren rocks that stretched mile after mile in front of them, found it difficult to believe that this was an expanse of wasteland greater than any on Earth.

At the horizon something seemed

to rise in the air, ascend to the sun, and then come plummeting down. Carson called the attention of the leader of the Mercurians, a member of the purple race, to the unexpected phenomenon. It seemed impossible that any creatures should be able to make their homes in this desolate waste.

The Mercurian raised his topknot cautiously, uncovering his eyes, and stared. Again the object rose in the air, shimmering like a prism of glass in the bright sunlight, and again it swept down.

"It is a flyer," the Mercurian said uneasily.

"Is it alive?"

"Very much alive."

It seemed incredible to Carson. A bird or a plane needed air in which to fly. There wasn't enough air here to support a mosquito.

The flyer was coming closer. A third time it soared upward, and then sank to the ground once more. Apparently it did not possess the ability to stay up very long. Apparently—

CARSON'S eyes were glued to the creature. It did not really fly—it leaped. That was the secret of its travel through the air. Carson imagined what a large creature possessing the leaping ability of a flea would do on this planet of low gravity, and knew he had the answer.

The flyer shimmered like a piece of glass, because it reflected the sun's light and heat almost completely. That was one of the best ways to keep cool on this overheated desert. Simply not to absorb heat.

The Mercurians had stopped, and were rummaging clumsily through their insulated suits. They brought out the rodlike weapons such as the king's bodyguard had possessed, and held them ready in their three-fingered hands. Evidently the flyers were dangerous animals. But this particular specimen, after coming within a few hundred feet of them, turned and soared off into the distance.

The fishlike animals had stopped and refused to go on. That meant there was a source of poisonous gases in the neighborhood. Several of the Mercurians came together, consulted brief-

ly and then, following the lead of the animals, moved off toward the right. They made a detour of several hundred yards, and then turned back again to the course they had been following.

Carson noticed an unusual-looking rock off to one side, and drew the attention of one of the Mercurians to it. The fellow examined it indifferently.

"This is a solar rock," he said.

It was more like a transparent piece of crystal than anything else, about six inches square, and no more than two or three inches thick. Inside it

Then one of the fishlike animals suddenly seemed to go mad. It tore at its insulated suit in an effort to get out, and the other two creatures refused to go on. That meant more poisonous gas. There was another long and time-wasting detour before the Mercurians could get straightened out on their course again. A few moments later their way was barred by a wide pool of liquid.

It was molten tin. One of the Mercurians, chosen by the leader, stepped hesitantly into it while the others

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were red and blue streaks that reminded Carson of the veins of a piece of marble.

The Mercurian noted his interest in it.

"It does not explode on the desert," he added. "Only in the Twilight Zone."

Carson picked it up and stowed it away in an outer pocket of his suit. He would have felt safer if he had been carrying several sticks of dynamite. But the mystery of these rocks interested him. Besides, he had a feeling they were important.

watched. He walked forward slowly, sinking gradually deeper into the hot metal. He had reached a point where the tin rose up to one third of his height when he wavered uncertainly, seemed to tremble and then threw up his arms and fell flat on his back.

Carson knew at once the reason for what had happened. The heavy liquid had buoyed up the Mercurian so much that he had lost contact with the ground, and had been unable to keep his balance.

The other Mercurians were staring

at their fallen comrade with a curious lack of interest, apparently ready to leave him to whatever fate the molten tin had in store for him. Carson was reminded angrily of the cheapness with which they regarded each other's lives. The fallen Mercurian was kicking feebly, his lung slots not yet clogged by the fumes of tin, but with little hope of getting to his feet again and escaping.

Carson strode forward into the molten metal, the vapor rising about him as his movements stirred the liquid. Though his feet were as well insulated as the rest of his body, he could feel the heat in his legs. Being heavier than Mercurians, however, he was in less danger of falling.

HE GRASPED the struggling Mercurian by the legs and began to haul him out. When they reached the edge of the metal lake again, he set the Mercurian on his feet, and shook himself to get rid of the drops of tin that still clung to him. He noticed the others gaping at him, as if he were crazy for risking his life without being forced to.

The lake of tin was so deep as to be an impassable barrier, and there was no choice but to go around it. As they picked their way along, Carson noticed on a flat slab of rock a series of yellowish metallic tracks, in shape like the prints that would be left by small claws. On closer examination, he saw that the tracks were molten metal, lead this time, the yellowish appearance being due to a small scum of lead oxide.

The Mercurians regarded the tracks with serious concern. They had been formed by one of the flyers that had skimmed through molten lead further on in the desert. The flyers were not numerous in most parts of the hot side, and they generally avoided the portions near the Twilight Zone. Their presence here in any great numbers would be an unpleasant surprise.

The Mercurians stopped again and got out their rodlike guns. Off to one side, a flyer flashed in the sunlight, like a huge animated jewel. Leaping from beyond the horizon, a second made its appearance, and then a third and a fourth. Presently about two

dozen of them became visible.

The leader of the Mercurians had flashed an order.

"Prepare to fight!" he commanded.

The Mercurians formed in a small circle, reminding Carson oddly enough of a circle of buffaloes about to face an attack by wolves. The fishlike animals had been placed in the center, where they remained quietly. One of the flyers rose high toward the sun and then swooped down, landing a few feet away from the circle of Mercurians.

Carson saw a sharp spear of a beak, lifted momentarily to disclose the three eyes under it. Then the flyer was off the ground again, as several of the guns vainly discharged their rays of energy.

Carson had a gun of his own, but in the desert, against so quick-moving an animal as a flyer, he decided it would be useless. Then his glove-encased hand closed on the solar rock in the pocket of his suit, and he smiled to himself. He would show these Mercurians a simple way of fighting that they did not seem to suspect.

Another flyer darted down, into the center of the circle this time. Before the Mercurians could turn, its sharp beak had punctured one of the insulated suits, and it was springing up again.

Carson twisted around with the speed of a falling cat. His arm flashed.

The edge of the solar rock landed a fraction of an inch under the flyer's eyes, slicing the topknot from the body as cleanly as if the job had been done by a knife.

The Mercurian whose suit had been punctured had slapped a small piece of material to the torn place. Carson looked around for other small rocks to throw, decided there were none and picked up the one he had already used. As he returned to his place in the circle, a pair of the flyers swooped down on the side opposite from him, slashed two suits and escaped unharmed.

The attacks began to take place steadily, without interruption. In five minutes, half of the Mercurian insulated suits had been slashed, and all but one of the attackers had escaped unharmed by the Mercurian guns.

Each flyer was more than a match for a Mercurian. Already three of the

Mercurians were dead and several were in a desperate condition, as a result of leaks in their insulated suits. As time went on, the refrigerating units would come to the end of their capacity, and all the Mercurians would be overcome by the heat.

"We must retreat," their leader announced.

"What of the wounded?" asked Carson.

"They are to be left behind."

"To be killed?"

"There is no way of escape for them, and they must not be permitted to burden us. Come quickly!"

AN ATTEMPT was made to take back the fishlike animals, but these had become panic-stricken. They crawled away crazily into the desert, where the Mercurians dared not follow them. Beside Carson, only seventeen Mercurians started on the way back.

Carson picked up another solar rock. As the flyers swooped down again, his arm flashed viciously. Another topknot parted company from its body, but not until its beak had slashed a Mercurian suit. But Carson's success gave the creatures reason to pause, and they hesitated before renewing the attack.

The leading Mercurian stepped into the shadow of a tall rock, waved his arms frantically and collapsed. He had fallen a victim to the poisonous gases. The others went around his body, dragging themselves on as rapidly as they could. The flyers, encouraged, darted down again.

One of the Mercurians, his suit cut to ribbons, dropped to the ground, shriveling in the heat. As the rest of them drew away, Carson noticed that the flyers had descended near each dead Mercurian and plunged their beaks through the insulation into the body inside. They were feasting.

In an effort to lighten their burdens, some of the Mercurians were discarding their almost useless guns. Carson picked one up and squeezed the dull end. Nothing came out. The charge of energy had been exhausted.

Somehow the flyers were becoming aware that the Mercurians were near the end of their resources. They be-

came bolder, slashing and tearing for several seconds after each landing before taking off again. The Mercurians were spreading out, their position continually weaker. It began to look as if none of them would succeed in returning to the safety of the underground passages.

Carson began to feel a mounting rage. Except for the solar rock he had originally put in his pocket, plus one he had picked up on the return journey, he had no weapons worth using. But the guns—

His eyes gleamed. If these fool Mercurians had any sense, they would have used the guns in the way he had shown them, not trying to hit the flyers with a weak ray that had a range of only a few feet, but with something more deadly.

Carson threw one of the rocks and smashed an over-bold flyer. His next shot missed, and then he hurled one of the empty guns, killing another. He ran down the line of Mercurians, picking up the discarded weapons and throwing them as fast as the flyers landed.

When they saw what was happening to their ranks, the attackers drew off again. Carson had killed almost a dozen by now, and his suit had hardly been touched. But there were only nine Mercurians left, and they were helpless, useless both to themselves and to him.

Off in the distance, less than half a mile away, the entrance to the underground tunnel already showed. It wouldn't take them much longer to get there, thought Carson. Another fifteen or twenty minutes of this slow retreat—

The flyers, springing up from the ground in every direction, converged toward a single spot. They were coming straight for the Earthman, determined to put him out of the way before he did any more damage. He had picked up his two rocks again.

Carson got a pair of the shimmering animals almost at the second of landing, slicing off their topknots with an aim which at a distance of a few feet could not miss.

But another pair were behind him, their beaks tearing at his suit. Carson

whirled around, caught one of them in his hands and twisted the topknot savagely from the body.

THE beak of the remaining flyer dug into his side, sending a wave of agony through him. Carson fell to the ground, his body on top of it. It tried to spring away, but his arm knocked it to the ground again, and the next moment he had torn it apart.

He stood up again panting, and looked around. While he had been fighting, the Mercurians had been continuing their retreat. There were still nine of them, and the flyers were no longer attacking. They had seen enough to be satisfied with what Carson could do to them. The fight was won.

Carson took a step toward the Mercurians, and fell to the ground again. He hadn't realized at first how serious that wound in the side was. He was conscious suddenly of being too warm, of having difficulty in breathing. The insulation of his suit, torn in back, was almost useless now. And his oxygen line had been cut. He could hear the gas hissing out slowly into the near-vacuum outside.

His arm reached around to the torn places of his suit. The tears were in a position that would have made it next to impossible for him to repair them by himself, even if he had had more time. But his time was growing short. Already he had begun to feel as if his suit were being heated by steam.

Was this, then, the end?

The giant sun suddenly grew before Carson's eyes, spreading over the whole heaven and blotting out everything else.

CHAPTER X

Into the Darkness

MEANWHILE, Nora and Haines had moved along the underground tunnels with the Mercurian group. Haines stopped suddenly.

"What the devil is that?" he demanded.

A huge cylinder barred their way, a cylinder resembling a water main. Their path took them several hundred feet past the corner where it made a turn, and then they noticed with surprise that it joined another main. But the joint was not that of two pipes coming together. It resembled the fork of a tree.

"Nora, this isn't a pipe," Haines said slowly. "It's a living thing—the biggest I've ever heard of!"

It grew colder as they went on. Along with a Mercurian, they entered a conveyance of the wheelbarrow type and rode along for several miles parallel to the huge cylinder. At a spot where the ground was so cold that they were half frozen, the cylinder spread out to a width of about twenty feet. It appeared to have roots embedded in the ground.

"It's a tree, all right," decided Haines. "It starts here, which seems to be not far from the edge of the cold side, stretches into the Twilight Zone, and for all we know extends to the hot side."

"Here's another!" exclaimed Nora. "A tiny one, just beginning to grow." She shrieked suddenly. "Oh—!"

"What's wrong, Nora?" Haines called quickly.

"It's moving! It isn't a tree at all. It's a—a snake!"

Their conveyance had stopped. Haines stepped out and approached the twisting object. As he tried to go around the side, it moved so as to remain opposite to him.

"It's rooted in the ground like the other one." Nora shuddered. "But there's something else there—"

Haines drew back, his face pale.

"Yes. The body of a dead Mercurian. It would seem that there's not enough nourishment in this rocky soil for the thing to get started growing right. It needs—animal food."

"But what's the use of it? Why do they let themselves be killed by this horrible thing? Why don't they destroy it?"

"Don't ask me, ask them," Haines said nervously.

The Mercurian explained, at a loss to understand their excitement. What they believed to be a tree was a full-

grown plantlike being. It reproduced by sending out ropelike shoots that did not take root in the ground, and it possessed at first the ability to move like an animal in whatever direction there was food.

It was a sacred creature, so sacred that no Mercurian was permitted to kill one, or even to defend himself from it. Once it had chosen its prey, and selected a spot on the cold side in which to settle itself, it gradually sank roots into the ground and lost its motility.

"But why is it sacred?" Nora insisted a little wildly.

"Because it brings water from below the ground."

Nora nodded slowly in understanding. Water was scarce on the surface of the planet. The ropelike creature, grown to full size, supplied as much as was needed by a large number of Mercurians. They sacrificed a few of their number for the sake of the rest.

Haines leaned close to the girl.

"Nice bunch, these Mercurians." His voice was casual, but his face revealed disgust.

"We can't get away from them," Nora said hollowly.

"No, we're stuck. And there are just the two of us, I'm afraid. Even if the Mercurians give Carson a chance for life, I don't see much hope for him."

"You mean—you think he's dead?"

"Either he is, or he will be soon. I'm not claiming I liked the fellow, Nora. You had something to do with that. But I certainly didn't want him killed."

He was very close to her now.

"It's you and I alone, Nora. We have only each other to depend on. And I want you to know you can rely on me."

"I know, Frank," she said dully.

THE Mercurian in charge of them reappeared and looked at them sharply. Now he brought out insulated suits with which he indicated they were to clothe themselves. Nora and Haines did not know it, but these suits were essentially of the same nature as the one in which Carson had set out to explore the hot side.

In place of the refrigerating unit, there had been substituted a series of

heating elements, and in the center of each suit was a group of lights for piercing the darkness.

"It seems we're headed for the cold side," commented Haines. "I don't think the king will suspect our going there."

They got into their wheelbarrow again, and a short ride took them to the surface of the planet. Nora, staring about her, was surprised to find that she could see dimly. She had forgotten that with no sun or moon to outshine them, the stars would give sufficient light to make the main outlines of the cold side easily visible.

There were five Mercurians in addition to Nora and Haines, all equipped like the girl with the heated and insulated suits. As they marched forward slowly over the rocky ground, some of the stones so fragile from the cold that they crumbled to powder under their steps, Nora was suddenly overwhelmed with a wave of dislike.

She didn't trust these Mercurians. Not any of them.

Presently, a few feet ahead of Nora, in the space between two enormous rocks, there was a darker patch on the ground, several inches across, like a small hole dug by a miniature meteor. The girl flashed her lights at it, but the black patch reflected no light at all.

She approached until she was almost above it. Then she saw with astonishment that the object was moving, inching along the ground at a snail's pace toward her.

One of the Mercurians noticed her surprise.

"They are alive, but not dangerous. All the same, it is well to keep away from them."

"How can they live here?"

"There is in their bodies a liquid that never freezes, no matter how cold."

Haines touched her shoulder, making contact between his suit and her own, so that the sound of his voice would carry.

"Sounds like liquid air to me," he said.

Nora was dubious. She turned to the Mercurian.

"Is it the gas we breathe?"

"That freezes. This does not."

"Maybe it's liquid helium," Haines ventured. "Unless the temperature got closer to absolute zero than I can imagine it could, helium would stay liquid."

"These creatures absorb radiations of all sorts," the Mercurian went on. "They knew we were approaching because of the radiations of heat from our suits. The light attracts them also, but it is too much for them. They can't stand a sharp light."

As Nora stared at it, the black patch suddenly exploded. Where it had been, there was nothing whatever left.

"It absorbed too much heat," the Mercurian explained. "The liquid turned into gas, the pressure inside became too great, and there was an explosion."

"How do you know all this?" Haines demanded. "Have you studied these creatures?"

"We have no need to study," replied the Mercurian placidly. "The knowledge has been handed down to us."

As they trudged on, Nora noticed several of the black patches scattered over the barren ground. Every one of the creatures appeared to sense her presence and that of the others long before they got close. When Nora saw them, they were moving toward her. They moved slowly but steadily, and after a few hours she was startled to see that the expedition had collected a group of followers of respectable size.

There were more than thirty of the black patches already around them within a distance of half a mile, and there were others approaching.

"What are we to do if—if they attack us?" Nora asked nervously.

"They won't attack," returned Haines with confidence. "You've just been told that they're not dangerous."

NORA laughed suddenly.

"I was forgetting. We do have a weapon against them."

She directed the light against the nearest one, and observed with satisfaction the explosion that followed a few seconds afterward.

"You'd better save your light, Nora," Haines said dryly. "We'll be needing it for a more useful purpose than de-

stroying creatures that can do us no harm."

A HEAD of them was a broad patch of ground that gleamed whitely in the starlight.

"Why it looks like snow!" Nora exclaimed.

Haines picked up a handful of tiny white crystals. As they absorbed heat from his gauntleted hands, they vanished.

"Looks more like carbon-dioxide ice to me than real snow," he observed.

They walked through the carbon-dioxide icefield, which was only about a foot thick at most. Even here the heat-absorbing animals pursued them, and on looking back Nora could see the tiny black spots moving restlessly over the white background.

Only once did they pass a group of the heat-absorbers, which seemed to have no interest in them. Haines prodded one of the animals with his foot, dislodging it roughly from the spot to which it had been clinging.

From underneath it there came a faint red light. Looking closely, Nora thought she could distinguish what looked like a mouth and feebly waving tentacles. The red light came from a luminescent animal which somehow managed to maintain its life in this frozen hemisphere.

The heat-absorbers were clustered around it like parasites, to prevent the precious energy in the red light from going to waste.

The stretches of carbon-dioxide ice, Nora discovered, were fairly infrequent, but they did cross two more in the course of what must have been about twelve hours of travel. Once they skirted a moderately large pool of bluish liquid that could have been nothing else than liquid air. Nora regarded the pool with a puzzled expression.

"Low temperature or not," she said, "that air just won't stay where it is very long. It's going to evaporate sooner or later. That means it hasn't been very long where it is now. It's come from some place below ground."

"Frank," she exclaimed suddenly. "I'll bet that's where these Mercurians have got the air they give us to breathe

—from below ground. There must be plenty of it on the planet."

Haines nodded in sober agreement.

Moments later something was drifting in the extremely thin air at about the level of Nora's eyes. As it approached, Nora felt her scalp begin to tingle. The oddness of the sensation surprised her. It was the way she would have felt if she had been in mortal terror; whereas, as a matter of fact, she was not afraid at all.

Then she noticed a blue spark leap from the metal stud that switched on her lights, and she understood. For some reason, she was heavily charged with static electricity. This creature that was approaching, in air too thin to sustain its weight, must be charged also.

One of the Mercurians had drawn a short rodlike object from the outer pocket of his insulated suit. One end was flat and dull, the other end sharp and polished. He aimed the sharp end at the approaching creature, and squeezed.

A light glowed suddenly, the floating creature shriveled up, and the next moment there was a miniature lightning flash from its body to the ground. When Nora picked up the body, it was an inert and shapeless mass of solidly frozen gray flesh, no bigger than a rabbit.

Haines had a puzzled look on his face.

"There's something queer going on, Nora. Believe it or not, my hair is standing on end."

"This whole region seems to be loaded with electricity," she agreed.

The Mercurian who had shot the floating animal turned to them, flashing a message.

"It was dangerous. It could kill easily," he said.

"How did it manage not to fall?" Nora asked.

"Its body was charged with electricity of a sign opposite to that of the ground. This whole region is full of static electricity that does not escape to the rest of the planet."

Haines touched Nora's shoulder.

"That gun is deadly." His voice sank to a whisper, as if the Mercurian could

understand him. "It wouldn't hurt us to have one."

But the Mercurians refused to let them have guns. It was as if they were afraid that the weapons might be turned against them.

Later, when Nora and Haines discovered that they had breathed up about two-thirds of the oxygen with which they had started, they stopped at one of the pools of liquid air. A short tube led from their oxygen tanks to the outside of their insulated suits, and they opened valves and let the bluish liquid run into the tanks.

They noted the location of each of the liquid air pools carefully in their memory, as travelers on a desert on Earth would mark the location of pools of water. There was the danger of running short of air again later on.

They stopped after many hours of traveling to rest and to eat. They were hermetically enclosed within their insulated suits, and it was impossible to make use of food outside. But several weeks' supply had been stored away within the suits themselves, and they could withdraw their hands from the gauntlets and manage their meals without too much discomfort.

As they rose to go on again, Nora looked about her, and her heart skipped a beat. The ground all around them had been blacked out. They seemed to be in the center of a vast extent of nothingness.

CHAPTER XI

Thieves of Heat

THE blackness moved. Nora saw that they were surrounded by thousands of the small black heat-absorbers, all of them pressing as close as they could get to these living sources of energy radiations.

Directly next to her body they were piled upon each other three and four deep, and Nora felt a sudden chill. Despite the insulation, the heat was flowing from her suit into their bodies more rapidly than the heating coils were making good the loss.

Two of those next to her, having absorbed more heat than was good for them, burst suddenly, one after the other. Haines, noticing for the first time the multitude surrounding them, cried out in amazement.

"What the devil—" he gasped.

A light flashed in front of them from his suit, to plow a path marked by the bursting of dozens of the stupid little creatures. The expedition hastened forward, and in a few minutes had got away from its too faithful followers.

They moved on in a silence broken only by the sound of an occasional rock crunching underfoot. Nora looked up at the stars, puzzled by something strange in their appearance. It required several seconds for her to realize the significance of what she saw.

The stars had not been moving through the heavens, as they moved when seen from Earth. They were fixed in their places, just as the sun was fixed in its place.

She had forgotten that Mercury rotated on its axis only once in eighty-eight days, and that the stars would in consequence turn just as slowly. The distance from Mercury to Earth was so insignificant compared with the least stellar distance that all the constellations had the same appearance as from Earth. She recognized Cassiopeia and the Great Dipper, and from that her eyes traveled to the Pole Star. Only here, on Mercury, whose axis of rotation was in a different direction from that of Earth, it was no longer the Pole Star.

They had stopped a second time to renew their supplies of liquid air when the chief Mercurian informed them that they were to make a long halt. As far as Nora knew, the Mercurians never slept, but they did occasionally rest. She herself was so tired that she welcomed the opportunity to lie down in her suit on the ground. It was about as convenient a place as they would find.

When they awoke after several hours, they would need more air from the pools close by. Then, after a few more hours of traveling, they would have to reverse their steps. Their heating coils had exhausted almost half

their stores of energy.

As Nora's consciousness slipped away, the black heat-absorbers closed in upon her. Her last memory was of a feeling of pity for their stupidity. They would be taking in too much heat, and exploding for hours on end.

After that thought, she slept.

When Nora awoke, she had a feeling that it was the coldest Fourth of July she had ever heard of, for that would be the date on Earth. The heat-absorbers were exploding like fire-crackers, with a regularity so great that it almost seemed as if they were timing themselves.

Nora herself was thoroughly chilled. She sat upright and looked around her. As far as she could see in every direction, there was a solid mass of black.

She aroused Haines, who fought hard against being dragged back from unconsciousness. When she had finally persuaded him to stand up, she tried to awaken the Mercurians. She discovered then that they were already awake, but in the sluggish state that was natural to them at low temperatures. They refused to stand up.

Nora and Haines refilled their oxygen tanks.

"It looks as if we'll have to try getting back alone," the girl said.

Haines nodded.

"There's nothing we can do for these creatures. Perhaps when we get back, the others will send a party to rescue them."

"When we get back." Nora tried to force a smile. "I wonder what our chances are."

SHE touched the stud that controlled the lights, and a bright beam flashed into existence, blasting a path through the black animals. She took one of the energy guns from a stupefied Mercurian. Then they set out toward the Twilight Zone, guiding themselves by Sirius.

Nora wondered what the king of the Mercurians would think when they returned without the rest of the expedition. Probably he would be angry, and inclined to kill them without further delay. She shrugged the thought away. There would be time enough to

worry about that once they were safely away from the cold side.

They stumbled on slowly over the crumbling rocks. From the distance, one of the floating animals began to drift slowly toward them, and Nora's hand closed nervously over her gun. But the animal had not noticed them.

It stopped over a black spot on one of the rocks, where several of the heat-absorbers were clustered around a blue, glowing, luminescent animal. Then came the lightning flash, and at the same moment half a dozen explosions as the heat-absorbers burst. The blue luminescence flared up momentarily into a lurid and dazzling radiance, and then suddenly disappeared altogether. The floating animal was already upon it, feeding.

The floating animals were perfectly adapted to their environment, thought Nora. The electric charge served them both as a means of keeping afloat and as a weapon. Whenever they loosed it upon the victim they had chosen, the repulsion between them and the ground disappeared, and they fell—directly upon their food.

She and Haines came to one of the liquid air pools, and Nora hesitated, puzzled.

"We didn't pass this one before."

"Guiding yourself by the stars isn't the same thing as traveling on a paved highway," Haines reminded her. "We may be hundreds of yards away from the path we followed going out. But as long as we keep going in the general direction of the Twilight Zone, we'll be doing well enough."

Something was moving on top of the pool of liquid air, something that was alive. It was gray rather than black, and it moved too rapidly to be one of the heat-absorbers. They stared at it as it reached the edge, and then appeared to roll silently away.

At a distance of about a hundred feet it stopped. Nora had the feeling that it was looking back at them, studying them, trying to make up its mind what they were. She flashed a light at it, and it turned and sped away from them once more.

She had the impression of a small furry animal, more like the animals of Earth than anything she had yet seen

on the planet.

The stars shone down on them without winking. "There's something wrong," Nora said. "Why don't they twinkle?"

Haines sighed.

"You seem to have forgotten, Nora, that there's not much of an atmosphere. It's the air that makes stars twinkle."

"And yet there's one of them that is twinkling—off to the left, at the horizon—"

They stared at it together. It looked like a star at first glance, except that it was a little too big. Perhaps it was a planet—Venus, or even Earth.

Nora knew that if the stars did not twinkle, the planets certainly would not. No, this was a light somewhere on the cold side, too bright to be one of the luminescent animals. And yet, that was odd too, for no light would burn without oxygen.

It might be kept alive by a current of electricity, but in that case there was no reason for its unsteadiness. Moreover, none of the lights they had seen the Mercurians use had anything like the greenish tinge of this one.

"We may as well investigate," Nora suggested. "I have one of the guns, in case anything goes wrong."

"I suppose we may as well take a chance."

THEY turned left and began to approach the light. A furry animal such as the one they had seen before scampered out of the way. While it was still fairly close, Nora flashed her own light upon it, but could detect nothing like legs. It simply appeared to glide along the ground without any effort of its own.

The light was growing brighter, and there was no longer any possibility of mistaking it for a star. Haines stopped suddenly.

"What's wrong?"

"There's something strange here. Either my heating coils are working overtime, or else there's something that prevents this section of the cold side from being as chilly as the rest of it."

"There's nothing wrong with your heating coils," Nora confirmed. "I feel the heat, too."

As they pressed forward, it contin-

ued to become steadily warmer, and they began to run across more of the furry animals. Now it began to look as if the light were due to some natural phenomenon such as radioactivity, and the animals had been attracted to it exactly as Nora and Haines had been.

She could see the source of the light clearly now. It was nothing but a small piece of colorless glasslike material, transparent, veined with red and blue streaks. It was several inches wide, but no more than an inch and a half thick. It lay upon the ground and glowed hotly, apparently of its own accord.

There was a circle of the small gray animals surrounding it, warming themselves by its heat. As the girl and Haines approached, they turned to stare at her.

The next moment the two human beings were alone. The animals had vanished, and the light had suddenly gone out. Only the stars were left, to smile down at them mockingly.

CHAPTER XII

The Crawlers

CARSON'S first instinctive thought was that he still lived. He took a deep breath and let it out slowly. Whatever else had happened, at least his oxygen tank was still intact. And for a few seconds he would be able to continue breathing.

He inhaled again, and his lungs seemed to tingle with pleasure. He felt that he could almost taste the air. He had never experienced a more welcome sensation.

There was something else too. The pain in his side was gone. And the sunlight—

He sat up with a start. The glaring sun was no longer above him, searing his eyeballs, baking him with its heat. It was dark here. Dark and cool. And the air tasted so good because he was not wearing an oxygen helmet at all. He ran his hands in surprise over his head and shoulders. No, he was wearing neither his oxygen helmet nor his insulated suit.

He felt for a moment ashamed of what he had thought about the Mercurians. Careless as they were about each other's lives, they had not been careless about his. They had come back to rescue him. They had brought him safely to the Twilight Zone, had put him in one of those little oxygen-containing huts they had built for him.

Something must have gone wrong with the lights, but he didn't mind that. It was enough to be alive. He wondered how long he had been unconscious.

There was a roaring sound in his ears, a sound he had heard long ago, so long ago that he had almost forgotten it. It was something he had heard on Earth. He thought of the noise of a rushing railroad train, of the dull rumble of a distant elevated, of the loud purring of automobile tires as they rolled rapidly through a tunnel. It was like all of these, but it was actually none of them. It was—

It was the sound of rushing water.

He didn't believe it. There was no running water on the surface of this planet. The hot side was too hot, and the cold side too cold, and the Twilight Zone he had to some extent seen for himself. Where there was no weather, no rain or wind, there could be no running water. It must be something else.

Carson stood up and felt something brush against his hair. He reached out with his hand. It was the ceiling that he had touched. The room was only about an inch or two more than six feet in height. His mind tried to grasp the significance of that fact, and after a second or two succeeded.

He was not in one of the oxygen-containing huts at all. He was some place underground. That was the reason why he could hear the rushing water. He was underground, and alive, and it was probably not the Mercurians who had rescued him at all.

He began to feel his way in the dark. He was in a narrow corridor, no more than three or four feet wide, but of indefinite length. The walls were slightly rough, as he might have expected in a tunnel. He wondered whether they had been formed naturally or by artificial means. The underground pas-

sages of the Mercurians, he remembered, had been perfectly smooth.

He stopped moving after a time. Someone—or ones—had brought him here, and possibly would show up again. With no light to guide him, the best thing he could do was wait.

He had no idea how rapidly the moments passed. He realized, after a time, that he must have fallen asleep again; for when next he became conscious of what was going on, there was a creature beside him in the dark.

He had no idea of what it was like, but he presumed it was friendly because it had saved his life. He wondered suddenly if this might be one of the enemies the topknotted Mercurians feared to let him learn about. The creature was doing something he hadn't expected. It was tapping his arm.

TWO hard taps, and then a soft tap, and then a hard tap again. A pause. And then the four taps repeated, in the same order.

This was a message, thought Carson. A message in something like the Morse code. Not very complicated, either. Only four taps altogether—

He tried to think of the different things the creature might be trying to tell him. It might want him to stay where he was—but it would need no message for that. It might want him to come along. That sounded more like it.

He stood up, willing to follow wherever it might lead. But evidently that wasn't it, either. The tapping continued, on his foot this time.

He sat down on the ground again, and the tapping continued on his arm.

The creature couldn't be very large, he realized, if it couldn't reach his arm when he was standing. He had at least learned that much. He reached out, and felt a hard smooth surface. There was a shell, like that of a turtle. That was queer, and unexpected.

The tapping continued. And suddenly Carson had what he thought was the answer. He tapped back on the shell, two hard taps, a soft tap, and a hard tap again. The tapping on his arm ceased.

The creature was simply trying to

find out whether he was an intelligent animal! Those four taps must represent one of the simplest words in its language. By answering, Carson showed that at least he had an idea of what a language was like.

The creature went away, making no sound. Carson waited, confident that it would return.

Ten minutes passed slowly. And then a pinpoint of light became visible in what seemed miles away. It danced in the air, and as it came closer, Carson saw that it had wings. It was the first winged creature he had seen on Mercury.

It was followed by a series of other winged lights. For the first time, Carson saw the tunnel in which he had been resting. He stood up. Something was moving slowly toward him on the ground.

It was the creature that had tapped him on the arm. It was small, as he had figured, about a foot and a half long, a foot wide, and no more than six inches high. And its shell was so smooth that it shone like a mirror. It crawled about on a dozen tiny feet, and despite that, did in fact resemble a turtle.

But it appeared to have no head. Neither the head nor the topknot that almost all the other Mercurian animals with which he was familiar seemed to have.

It came up to him and at once tapped him on the foot again. Six taps this time. Carson decided that it wanted him to follow it, and he was right.

The winged lights danced along, giving an extremely faint illumination. Carson could see little change in the passageway as he followed his guide. It hardly twisted at all, and that made him think that it was not a natural tunnel in the rocks but something created by these animals themselves.

At one place a side passage branched off, and Carson could hear the underground stream, louder than ever. Then the noise died away again, sank to a dull murmur.

The passageway broadened out, and his guide stopped. Staring at the ground, Carson made out the dim figures of several other creatures similar to the one which had brought him

there. They reminded him of a reception committee of prominent citizens, waiting to interview an important stranger.

His guide moved up to one of them and tapped for several seconds on the smooth shell. Then the second creature approached Carson, and Carson could feel the intermittent pressure on his foot.

Three soft taps, a hard tap, soft taps again—it was becoming complicated, and Carson had not the slightest idea of the meaning that was supposed to be conveyed to him. He shook his head, hoping that the gesture wouldn't baffle his hosts.

The message stopped, began all over again. It was no use.

AS the creatures discussed what to do, Carson observed them closely. The tiny feet were flexible, and seemed to be used almost like hands. And on the under surface of each animal were three pouches, apparently for the purpose of carrying small objects.

It struck him then that these unimpressive-looking animals might have a high degree of civilization. They had a language, and they had hands. These were all they needed to start with.

Watching them, Carson had an idea. He projected a series of ideographs on his helmet.

"I don't understand what you're talking about," he said.

There was a long pause, as if they were trying to absorb the meaning of that. Even if they didn't know what the ideographs meant, they must have seen the topknotted Mercurians conversing in similar fashion. Maybe that would help them to transmit a message Carson could understand.

But it didn't. They seemed so baffled by his failure to understand the tapping that he was forced to grin.

"The trouble with you fellows," he said, "is that even if you understand the ideograph language, you have no way of answering me. You're not trying to get my message, you're trying to send me one. Is that it?"

That must have been it, for there was one final attempt to communicate that message of theirs, and then the crea-

tures gave up. The one who had originally guided Carson to this place tapped him six times on the foot. That much he got. It meant that he was to follow again.

The whole committee moved off after him. They entered one of the side passages, and as the roar of the stream increased, Carson began to strain his eyes for the sight of it. When he finally reached it, he was astonished to discover that the water was flowing slightly uphill.

He puzzled his mind over that for a time, and then laughed shortly as he got the solution. He had assumed unconsciously that the passageways through which they had been walking were horizontal. They weren't. They were built on a diagonal, leading downward, and he hadn't been conscious of the fact because the gravity of Mercury was so low.

His sense of balance wasn't any too good on this planet, hadn't told him that he was going downhill. The water flowed not up, but down, although at a lesser slope than that of the passageway.

The stream was only six or seven feet across, and apparently no more than a yard deep at most. By the faint illumination that the winged lights provided, Carson could see the bright sparkle of the water as it flowed over a rock, and the sight reminded him of the waves of the ocean back on Earth.

His guide led him over a small stone bridge that crossed the stream. Carson began to wonder where they were heading for. There seemed to be a definite purpose in this procession of strange creatures.

They stopped eventually, and the winged lights fluttered low over the floor of the passageway, illuminating an object that lay there. Carson bent down, staring at it. It was the insulated suit he had worn.

He was surprised to find it in excellent condition. The torn places were mended with some material whose nature he could not guess, and even the leak in the oxygen-tank connection had been fixed.

The guide was tapping at his foot again. Carson picked up the suit, de-

ciding to carry it and walk unhampered until he would actually need its protection.

They were going upward now. They climbed steadily, and by the time they had been moving for a half hour, they must have risen several hundred feet. Carson began to notice a gradual change in the atmosphere. It was thinner, and difficult to breathe.

His guide tapped on his foot and then on the suit. This was one of the times that Carson understood him. He adjusted the helmet over his head, and continued to climb.

IT was becoming warmer now. Until the last few minutes, Carson had been so comfortable that he had not realized the temperature was changing. They must still be on the hot side.

Far off in the distance, a needlelike shaft of white light stabbed into the dark passageway. That would be the sun. It was time for him to put on his insulated suit.

He dressed rapidly, and turned on the refrigerating unit. The creatures noted what he did with apparent approval. To them, the change in temperature and air pressure seemed to mean little.

These creatures were certainly, thought Carson, the most adaptable beings he had yet met on Mercury.

The shaft of light became larger and more dazzling. At sight of it his guide had actually seemed to quicken his pace.

The procession moved so rapidly now that in his clumsy suit, Carson had difficulty in keeping up. He began to wonder what these creatures intended to do when they came to the surface of the hot side.

They reached the opening through which the light entered. An instant afterward, Carson was out on the broiling desert once more, with the same gigantic sun flaming overhead. To his surprise, the procession halted altogether.

The creatures spread out and then settled down motionless. They were taking a sunbath.

The creatures' smooth surfaces reflected the sun's light like mirrors. For

the first time Carson was able to examine them carefully. Their shells, he discovered, were fairly transparent. He could see right through them in some places. In the center, for instance, there was a small area with red and blue streaks, like the veins of a piece of marble.

His eye caught sight of those veins, and refused to let them go. He had seen something like that before, and not long before, either. On this very desert—

Of course, the solar rocks! Put a transparent shell over them, and they would look exactly the same. But they were explosive, and these were living creatures, who couldn't be expected to fly apart like so many sticks of dynamite.

Carson's gauntleted hand slipped into his pocket and came out with a small object. One of the solar rocks. He had used it as a missile against the flyers, and recovered it later. It had been in his suit ever since he had been rescued.

One of the creatures had noticed him examining the rock. It came close and tapped him excitedly on one foot. Then it went from one shell to another, tapping, and in a moment Carson was the center of a curious circle.

He made a gesture as if he meant to throw the rock away. Instead one of the creatures took it from him. There was a long consultation among them, and then they went back to their sunbathing.

Carson racked his head, and upbraided himself for not being able to understand their language. That solar rock was important. It might even be a clue to the solution of some of the problems that beset him. They were anxious and willing to tell him what it was—and he couldn't grasp a single one of their ideas.

In the distance, a flyer rose into the air and swooped down toward them. Soon it was fairly close. Then it noticed the dozing creatures, and turned abruptly. It wanted, Carson decided, to have nothing to do with them.

It almost looked as if these creatures were far from being as harmless as they appeared.

CHAPTER XIII*The Wrong Friends*

AFTER several hours, the creatures moved underground once more. Carson rid himself at the first opportunity of his insulated suit, and strode on after them. His mind was beginning to put things together, although in a very tentative fashion.

Those solar rocks were not things that could be fastened to the shell-like bodies and then taken away again, as men fastened wooden legs or false teeth. They were part of the bodies themselves. And if these "rocks" survived after the death of the creatures, they must be something like internal skeletons, to help preserve the shape of the body.

But Carson could see no need for internal skeletons. Therefore it was obvious that the solar rocks served another purpose. If he could only guess what it was—

They put the sunlight far behind them. With nothing but the winged animals to illuminate their path, Carson had all he could do to see where he was going. They were not descending along the same passageway by which they had come up. This was steeper, leading more rapidly to the cool regions below.

He heard a thin trickle as of water, and turned to see this new stream. A slow rivulet of a luminescent liquid was running down the side of a rock.

The slowly moving creatures stopped. One of them approached Carson, to tap on his foot once more. It was the signal to follow.

The creature led the way down a low tunnel that came to an end in a wide chamber. In the center was a deep pool of the luminescent liquid. This was evidently the source of the rivulet Carson had seen.

He approached the liquid, sniffed at it. It had no perceptible odor. He touched his finger to a drop or two, and withdrew his hand cautiously. The liquid had an oily feel, but seemed to flow as readily as water itself. Carson

spread it out over his hand, but after a moment or two there was no sign of evaporation.

In the center of the pool, the thick layers of liquid were a deep reddish brown, but the luminescence itself was blue-green.

Carson turned to the creature which had led him here. The latter, apparently deciding the Earthman had finished his examination, started on the way back. But Carson was reluctant to leave. He had never seen anything like this liquid before.

With a sudden inspiration, he dipped the insulated boot of the suit he had been wearing below the surface, and scooped about a pint of liquid into it.

Then he returned down the low-roofed tunnel and continued to go deeper underground. The air pressure became greater the further he went, and he decided that somewhere far down there was a source of air.

Somewhere far down—Carson's forehead wrinkled. This planet, different from Earth in so many other ways, was different in this respect also, that the further down he went, the colder it became.

That meant that it was even more advanced along the road of planetary evolution than Earth, and that whatever heat it possessed came from the sun. If the source of air was deep down, that air was probably liquid.

The creatures with, whom Carson was traveling did not stop when they had reached the approximate level from which they had started on the way up. They continued on as if they had a purpose in mind. Carson decided that he would find out what that purpose was.

CARSON'S calculations of time were mere guesses. But he judged that they had been traveling for about two days when the creatures first began to exhibit signs of caution.

During those two days the Earthman had learned much about them. He was sure now that they had a civilization of their own, and that they were the enemies the topknotted Mercurians feared. But he did not know why.

They had caches of food at several

places in the tunnels and occasionally they stopped to let him eat. But they themselves needed very little food. Their adaptability amazed him.

Now, however, they were afraid of something.

They stopped going downward and began to climb slightly. All the same, the temperature continued to drop. That in itself was enough to indicate that they were far past the limit of the Twilight Zone, headed toward the cold side.

And then the nature of the passageway changed. From the narrow tunnel it had been when Carson first entered it, the passage broadened. The walls were now smooth and gray, and an indirect illumination made the winged lights no longer necessary.

The creatures had entered the territory of the topknotted Mercurians. Carson knew now of what enemy they were afraid. It was the cruel, un pitying race that had brought him to Mercury.

All the creatures had come to a stop. Far off in the distance there were footsteps, the sound brought to Carson by the solid walls. He threw himself prone on the ground and waited along with the others.

If the Mercurians passed by into another tunnel, there would be no trouble. But if they made up their minds to attack, the enemy would regret it.

Two of the Mercurians came into view at once, both of them tall and with purple topknots. They were of the caste of the rulers. And they were not turning off down any side passageway.

They must have noticed something amiss and come to investigate.

They stopped at a distance of about a hundred feet, their topknots lifted in an attitude of watchfulness, the three eyes of each opened wide. Carson knew that their powers of vision were not as good as his own, and for a moment he hoped that their examination would fail to discover the strangers.

But the Mercurians had seen enough to make them suspicious. They advanced a few feet further, and then turned back abruptly. They had gone for help.

One of the shell-like creatures was tapping now on Carson's arm—the six taps whose meaning he understood. The others were already moving rapidly. Carson ran after them, retracing his steps to the nearest side passage, then turning off.

With the weight of his insulated suit to hamper him, it was all Carson could do to keep up. Nevertheless, he found time to wonder at the enmity between the two races. The small creatures were not cruel or bloodthirsty, and would never pick a quarrel merely for the pleasure of killing.

But the topknotted Mercurians might. And if he was with their enemies, he would be considered an enemy too. He had been rescued by the wrong friends.

They turned one corner after another, and in five minutes they had covered so winding a path that Carson decided the danger of pursuit was almost gone. The network of passageways had

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NO FINER DRINK... for Salesgirl—or Sailor



the intricacy of a labyrinth, and it seemed certain that the topknotted Mercurians would lose the trail.

Carson was glad when the creatures slowed down and began to move again at a more leisurely pace. He had entirely lost his sense of direction, but the others seemed to know where they were going.

IT surprised him when they came to a complete stop and began to turn back. The road ahead must be blocked. Then, from behind them sounded a faint rustling noise, and a pair of topknotted Mercurians came out into full view.

Running ahead of them, in the manner of bloodhounds on a trail, were a pair of the fishlike animals, the lung slots at their sides flapping rapidly as they sniffed at the footsteps of their quarry.

The small creatures had gone into a huddle, tapping each other's shells so rapidly that Carson couldn't distinguish the separate sounds. One of them turned to him, and Carson got the impression of a dozen rapid taps on his foot.

The exact number didn't matter, because he wouldn't have understood what it meant anyway. But the important thing was that they were not giving him the command to follow—and meanwhile, all of them had started again down another of the innumerable turnings.

That meant that it was up to him to hold up the pursuit for as long as he could.

CHAPTER XIV

The Fight

CARSON'S eyes glittered. He didn't mind having a chance to get back at the cruel race that had brought him here. Their energy guns would be useless except at close range, where his own superior strength and agility would count greatly. As for his own gun—he shook his head and decided regretfully against using it. He

wouldn't kill them unless he had to.

He had put down beside him the insulated suit he had carried so far. With his arms free and his body relieved of the burden, he had a feeling of unusual power in his muscles. And with only a narrow passageway by which to approach him, the topknotted Mercurians wouldn't be able to surround him as they had done once before, to bear him down by the sheer weight of their numbers.

The leading Mercurian came close, almost within range of the gun Carson carried. Carson faced him and projected a series of ideographs.

"Why are you pursuing these creatures?" he asked.

The Mercurian stopped abruptly, and his topknot lifted in surprise.

"They are our enemies," he declared.

"I can see that. Why?"

The Mercurian hesitated.

"I do not know, and it does not matter. They have been our enemies for generations. We are ordered to kill them."

Another one of those crazy hereditary feuds, thought Carson.

"Who has given the orders?" he persisted.

"The king. These creatures are crawlers, and only those that walk erect have the right to live." The three eyes studied Carson's husky figure blocking the path. "You are to let us pass."

"The crawlers are harmless. Turn back, and leave them alone."

The Mercurian studied him again for a moment, without replying, and then made an unexpected move to raise his gun. Carson, taken by surprise, barely had time to sidestep the killing ray.

But the next moment he had his own gun out of his pocket, and his arm muscles grew taut and then lashed out rapidly. Before the Mercurian could squeeze the trigger again, Carson's weapon had caught him square in the chest, paralyzing his lung slots. As he panted for breath, Carson, giving him no time to recover, plunged forward and caught him around the legs.

The Mercurian fell backward, entangling the companion who was just behind him. Carson lifted the leader

and threw him as hard as he could down the passageway, into another squad that had been rapidly advancing. They all went over like so many ninepins. The Mercurian whom Carson had thrown lay sprawled on the ground where he fell, his body beginning to shrivel. He had stepped into the path of a gun held by one of his own followers.

In the confusion, Carson was everywhere, aiming at their chests to paralyze their breathing. Those who were coming up from behind hesitated, puzzled as to how to get past their own fighters. One or two of them tried to use their guns and succeeded only in hitting other Mercurians.

They drew off after a time, leaving half a dozen on the ground. Carson piled the fallen Mercurians neatly in front of him, forming a barricade with their bodies. Those who were still on their feet watched angrily.

Carson expected another attack, but it did not come. Instead there was a long argument, and then some of the Mercurians drew back and disappeared from sight.

He knew what they meant to do. They were going to use one of the side passages, and get at him from two directions at the same time. Carson eyed the gray walls thoughtfully. It wouldn't be so easy to fight them off. Especially if they used the energy guns. He wouldn't be able to avoid the rays of energy coming from two directions at once.

Carson picked up a pair of guns from the fallen Mercurians. He regretted the necessity, but he would have to use some of their own tactics. He would shoot to kill. And he doubted whether even that would save him.

HE FELT a sudden tapping at his foot. It was one of the crawlers, who had returned unobserved. Six taps. Carson had held up pursuit long enough. He could go.

He picked up his insulated suit and sped after the crawling animal. In back of him, the Mercurians, after gazing doubtfully, lost their fear of a trap and hurried forward once more.

Carson looked back, in time to see a

group of them rush into the tunnel from a side passage and peer about in bewilderment before they noticed his fleeing figure. He had escaped encirclement with only a few seconds to spare.

After a minute or two, to his surprise, he found himself among the rest of the crawlers. He had expected them to go much further during the time in which he had been delaying pursuit.

Now they put on full speed ahead, but the topknotted Mercurians were closer than ever. Carson began to wonder whether all his efforts had been wasted.

A faint vibration passed suddenly from the ground to his feet and spread through his body. The topknotted Mercurians felt the vibration, stopped instantly and began to run back in the direction whence they had come. Off from one of the side tunnels there came a sudden roar.

There was a second roar, a third, and then the walls between Carson and the fleeing Mercurians caved in suddenly. Fragments of rock flew toward him, and he threw himself flat on the heaving ground.

So that was what the crawlers had been doing! Mining all the passages by which their enemies might pursue them. Carson gazed at the small creatures with new respect, as they set off calmly again toward their unknown destination.

As far as Carson could tell, they were traveling horizontally now and directly away from the hot side. It was becoming colder, and the air was a little more dense than it had been under the Twilight Zone, where he had first gone underground. It was barely possible for him to breathe without making use of his oxygen tank.

After several more hours, Carson put on his insulated suit. The refrigerating unit inside operated by means of a motor, and he could cut out the cooling coils, using the heat to warm the suit. Meanwhile, all he needed was the insulation alone.

A half hour later the path curved sharply upward. To muscles as tired as Carson's were, the climbing was painfully difficult. But he was in the grip of a strong feeling of curiosity

now. He was wondering what he would find when he reached the surface. Perhaps the cold side wasn't as horrible as he had pictured it. Perhaps it would be possible for him to live there—

There were stars above him, first a few seen dimly through the opening of the tunnel, then several more as he rose further and his angle of vision widened. And then there was the whole starlit sky, with Orion and Andromeda and the Milky Way shining down more brightly than they had ever shone on Earth.

Some thirty feet away an oddly shaped greenish light flickered unsteadily, the small creatures around it casting eerie shadows. Carson's glance wandered around the circle, coming to rest upon two large figures in insulated suits.

Topknotted Mercurians! Carson's dazed and tired mind could speculate only vaguely as to how he and the crawlers came to be there, standing quietly in the midst of their enemies. His hand closed upon one of the guns. If they made a false move, he would shoot.

The greenish light grew momentarily brighter, its rays penetrating his helmet. One of the clumsy figures moved toward him, its arms gesturing wildly. They were not Mercurian gestures, but they might mean danger. He raised the gun slowly.

Then one of the crawlers began to tap on his foot. Carson stared at it while the insulated figure came close.

The light flickered again, and Carson saw the features inside the approaching helmet. The gun fell from his fingers, and the next moment he had Nora in his arms.

CHAPTER XV

Energy to Spare

AFTERWARD Carson leaned back lazily, listening with pleasure to Haines' raving. Nora, to keep her ears from being blistered, had discreetly moved away. After a time, as Haines paused for breath, she approached.

"Now that you've told each other how glad you are to meet again—" she began.

"Glad to see that upstart?" protested Haines indignantly. "It's too bad he didn't lose himself in those tunnels. And why did you throw your arms around him, after all that you told me about being 'platonic'?"

"That was just friendship," Nora smiled. "I'd do as much for you, after not seeing you for a week."

"It's an idea," said Carson. "Try disappearing for awhile, Haines, and see how we get along without you."

Nora pouted.

"You're as bad as he is," she said. "The minute I'm nice to either one of you, you begin to take yourself for granted. I'm dreaming of the day we get back to Earth, where I'll meet somebody who's nice and quiet and thoughtful, who doesn't think he's lord of creation. Somebody—"

Nora went on, and Carson's mind wandered. He was no longer tired and his oxygen tank had been filled with liquid air. Now that the greenish light had been turned on for several hours, the region around it was so warm that he had removed his insulated suit.

Around him, a group of crawlers stood, watching. It had been a surprise to find Nora and Haines among them, and he still found it hard to believe at times that his colleagues had escaped from the topknotted Mercurians.

Nora paused finally, and Haines began to growl again. Carson interrupted. "When did you first realize the crawlers were intelligent animals?"

"After they realized we were," said Nora. "When they first caught sight of us, they thought we were Mercurians and did a disappearing act. Later, they discovered their mistake, and since then they've been very friendly. They may not look it, but they're the nearest thing to human beings living on this planet."

Carson nodded.

"I wish I could make head or tail of what they've been trying to tell me for the past few days," he grumbled.

"Their language is peculiar," Nora admitted. "But I'm beginning to learn it."

Carson stared at her.

"Then you're better than I was," he conceded.

"Who isn't?" asked Haines raspingly.

Carson ignored the interruption.

"How did you do it?" he asked.

"It wasn't hard. Most of them understand the ideograph language, although they themselves don't use it. They've taught me to distinguish 'yes' and 'no' in that tapping code of theirs. I simply say something, and they tell me whether I'm right or wrong. And I've also learned several words in the tapping code."

Carson considered.

"Have they told you how they manage to get heat and light from that rock over there?"

"Those rocks are their inner skeletons," Nora explained. "During life they are used to store energy directly from the sun. But gradually, some sort of aging process takes place, and the animal dies. There's a great deal of energy left in the skeleton, and these creatures know how to get it out; either slowly, as they're doing now, or rapidly, by creating an explosion."

"I don't know how they manage it. The energy is thousands of times more than that of any chemical reaction I've ever heard of."

"I've got a theory about that," Carson said slowly. "You know that when an atom takes part in a chemical reaction, only the outer layer of electrons is affected. The inner electrons and the nucleus of the atom go on as before, unchanged."

NORA nodded. Haines seemed on the point of interrupting, but controlled himself as Carson continued.

"Now when it comes to the transmutation or annihilation of an atom, and the release of atomic energy, the process that takes place is the splitting or destruction of the nucleus itself. The old atom is changed completely, and can't change back."

"Well, why can't there be something intermediate, something that will involve a change in the inner electrons instead of the outer ones, and leave the nucleus untouched?"

"These inner electrons are the ones

responsible for the emission of X-rays, and there's a lot more energy connected with them than with the outer ones."

"Your idea, then," Nora said, "is that these rocks represent the result of a new type of chemical reaction, due to the intense heat and light of the sun, plus the presence of unknown catalysts in the animal's body—a reaction that involves thousands of times more energy than any known on Earth."

"That's it," agreed Carson.

"Well, the energy's there, there's no doubt of that. And these creatures know how to use it. If they could teach us the secret—"

"We'd know how to solve the problem the topknotted Mercurians have put before us," Carson declared.

"And be able to get back to Earth," Nora added. "And solve our own problem as well."

"Now you're talking!" said Haines, enthusiastic at last. "That's what we'd better start thinking about. How about finding out what the secret is?"

THERE was a slight pause, and Carson shook his head.

"It won't be as easy as you think. First, no matter how high the energy content of the solar rocks, there aren't enough of them permanently to affect the temperature of the cold side. This planet may be smaller than Earth, but it's a fair size for all that, and the cold side is equal to a large continent in extent. It would take millions of solar rocks to raise the temperature of any appreciable area here."

He could see the disappointment on Nora's face.

"Trust you to find something wrong," Haines grunted.

"What else?" Nora said quietly.

"In the second place, I've been thinking over what those topknotted gentlemen want us to do. If we could equalize the temperature of the planet, we'd end the existence of the crawling animals."

"You're right," agreed Nora. "They need low temperatures when they are young. I've learned that they can't utilize the sun's energy unless they undergo a period of freezing first."

"And they need the heat of the hot side later on," Carson recalled. "They

have to expose themselves to the solar rays."

"The sun would still be there," Haines said, scowling.

"But the hot side would be inhabited by topknotted Mercurians who hate the crawlers. They'd do their best to kill them off," Carson said slowly.

"They would," admitted Nora. "And my sympathies are with the ones who act human, no matter what they look like."

Haines' voice was sullen.

"If you're going to worry about them instead of about ourselves, then we'll never get back to Earth. The topknotted ones won't let us have that spaceship unless we help them."

"That," said Carson, "brings us to our third point. There's no getting back to Earth anyway, because the spaceship has been damaged and the Mercurians don't know how to repair it."

"You're trying to scare us!" Haines declared, growing pale.

"I am like the devil. I'm telling you the truth."

THEY were silent then. Carson, noting the pallor of their faces, knew what they were thinking. It was an exile more horrible than any despot on Earth had ever inflicted upon his enemies.

"The crawlers might know how to repair a spaceship," Nora suggested tentatively.

"It's a chance," agreed Carson. "We'll have to ask them."

Haines' eyebrows lifted.

"Do you think the Mercurians will invite them over and stand around waiting for them to do the job?"

"We might convince them to do so," returned Carson. "I've still got a couple of guns."

"There are too many of them," Haines snapped. "Your guns wouldn't be worth a nickle."

Haines was right, Carson admitted to himself. He might kill dozens of the topknotted Mercurians without managing to get possession of the spaceship.

He wandered away from the others, examining the ground. Where it had been warmed by the radiation from the

solar rock, it was very much like the ground in the Twilight Zone. Carson wondered whether, in the absence of light, this soil would be able to support any sort of plant life that could be useful for feeding the Mercurians.

He had reached the edge of the small circle heated by the solar rock, and was beginning to feel the chill of the cold side. He could use his insulated suit here. His body felt cold, except—

That was odd. One leg was like ice, and the other was quite warm. Carson looked down, noticed that his right leg was glowing with a faint blue-green luminescence. Then he remembered for the first time the luminescent liquid which he had scooped out of the pool.

He had not been conscious of the liquid when he had put on the suit. Most of it had evidently soaked into the insulating material, but without doing any harm. Some of the liquid had very likely collected in the lower part of the boot, and risen when he had put his foot in.

It was queer that he hadn't noticed anything. The liquid had soaked into his clothes, and he hadn't even been aware that it was there.

Now it seemed to have helped keep his body warm. Carson touched a small drop of it that he saw clinging to his shoe, and observed once again that it had an oily feel. The surprising thing was that in this near freezing temperature, the liquid had not cooled off like everything else.

Carson moved away from the cold ground toward the solar rock, letting the heat soak into his body. Then he felt the drop of liquid again. It was neither warm nor cold. But now, of course, his hand was warm. That was the difference. The liquid itself hadn't changed in temperature.

Yes, this liquid was as near to a perfect insulating material as anything he had ever heard of. And in order to transfer heat from the hot side to the cold side of Mercury, a man would require good insulation.

A vague idea floated in the back of Carson's mind. He felt that the solution of the problem which the topknotted Mercurians had set him was almost within his grasp. If only he wanted to solve it . . .

CHAPTER XVI

The Way Back

HE FOUND Nora and Haines filling their oxygen tanks once more. The crawling animals had decided to return toward the hot side, and they were all getting ready to leave.

Nora had spoken to one of them, asking him whether there was any possibility of repairing a spaceship. The answer had been in the negative.

"That," growled Haines, "finally ends our chances of getting back."

"No," Carson shook his head. "There's one more possibility. Just one more."

"What's that?" Haines demanded sneeringly. "Build a ship of our own?"

"We don't have to go that far. The Mercurians have heard of another ship supposed to exist somewhere on this planet. We may be able to find it."

Haines exploded.

"Good God, you've got a planet with more surface to it than the biggest continent on Earth! And the whole inside is honeycombed with tunnels. How long do you expect to take to find the ship?"

But Nora felt new hope growing within her.

"What's your idea, Douglas?" she asked Carson.

"We can eliminate both the hot side and the cold side, because the Mercurians never lived on either one. They'd prefer to store the ship where they could get at it. That leaves only the Twilight Zone."

"That's from two to three hundred miles wide, and extends all around the planet," Haines pointed out. "It would still take you a lifetime to make the search."

"I won't have to spend very long," Carson declared. "I can eliminate the surface at once, because if the ship existed there, the Mercurians would have discovered it by now. That leaves only the underground tunnels."

"I've been learning about those tunnels," Nora said doubtfully. "They form a labyrinth. Once we lost our

way in them, we'd never get out again."

"We'll have to be careful not to lose our way, that's all. We'll let the crawlers guide us."

"But how do you expect to find the ship?" Nora wanted to know.

"I have an idea for a very rapid way of doing it. I'll see later whether or not it'll work."

Haines was beginning to mutter contemptuously, but they had no further time to talk. The crawlers were starting to move.

They did not plunge at once into the tunnel from which they had emerged, but started off over the surface of the cold side.

In one of the regions across which they passed, the electrically charged floating animals were common, but caused them no trouble. The crawlers had taken a reserve supply of liquid air along with them, and whenever the charged animals approached, they sprayed them with air to which tiny crystals of ice and a volatile acid had been added.

The air vaporized instantaneously under the influence of a warm solar rock and conducted the electric charge harmlessly away, so that the now electrically neutral animal at once fell to the ground, helpless until it could build up another high electric potential.

Two or three hours later they entered a tunnel.

In one of the passageways, they came across what looked like the base of a huge tree deeply rooted in the ground. The tree rose a few feet, and then turned off horizontally, extending far away into the distance. Slithering along the trunk were two of the snake-like animals with which Carson had previously had some experience.

THE crawlers all stopped at once. Then one of them tapped on Nora's foot.

Nora turned toward Carson.

"They want you to use your energy gun," she said.

"To kill those things?"

"Yes. They say they can destroy them with their explosives, but that isn't a good way. The explosion might harm the tunnel and attract attention."

The snakelike animals had frozen

into a coiled position, as if waiting. Then they began to glide gently toward Nora and Haines.

Carson had his gun out, but he was not prepared for the sudden whiplash action of the two animals. They threw themselves forward, twisting around the legs of the two human beings. Haines fell to the ground at once; and Nora, struggling desperately, succeeded in remaining on her feet for no more than a second or two.

Carson had almost pressed the trigger of the gun, when he thought of the danger to Nora. He stepped forward, forcing himself to be calm, and seized the animal which had attacked her. It tore unexpectedly in his hands, and as the two pieces began to slip away, he aimed at each of them in turn. They began to shrivel as the ray hit them. Carson treated the animal that had attacked Haines in the same manner.

Nora rose to her feet, pale and breathless.

"I think we know now," she said, "why the topknotted Mercurians hate these friends of ours."

"It's because they kill these confounded snakes."

"Yes. The others protect them and consider them sacred, because of their use in providing a water supply."

Carson was examining the tree. There was a thick outer layer of hard material that probably served the same protective purpose as bark. But it was what went on inside that interested him. Whipping a pocket knife from his trousers, Carson set to work cutting through the outer layer.

It was even harder than he had expected, and the knife blade was considerably blunted by the time he had penetrated to softer material. When he took the knife away, a thin stream of watery liquid trickled out through the cut. It evaporated almost at once, sealing the incision with a layer of gummy material.

The tree was like a huge pipeline, Carson thought. The hard outer layer was already insulation of a sort, and with the addition of that luminescent liquid, it would be perfect. The outlines of a vague scheme for equalizing the planet's temperature began to take

shape then and there in Carson's mind.

He felt six taps on his foot. The crawlers were getting impatient for him to come along, and he left the tree regretfully. That problem, after all, could wait. Right now there was the more important task of getting safely over to the hot side.

Judging from the attitude of the crawlers, that wasn't going to be easy. They seemed to believe that the topknotted Mercurians were lying in wait for them.

The passageway illumination went out suddenly, and for a few seconds Carson waited motionless, as he had been forced to do several times before. He could hear the tapping of the creatures on each other's shells. Then Nora's voice whispered in his ear.

"The road is blocked," she said.

"You mean that the Mercurians have deliberately cut off the path?"

"That's what they are saying."

Thirty seconds passed slowly while the crawlers discussed what to do. Then Carson felt the customary six taps on his foot.

They began to retrace their steps. But they had not gone far before they turned off to one side. Carson understood. They were going to try a detour around the obstacle.

AFTER a few minutes, they had to stop again and go back once more.

"They're puzzled," Nora whispered to him. "This has never happened before."

"You mean that the others have never made such a determined effort to get them?"

"Yes. It almost looks as if—"

"The topknotted ones are after us, and not the crawlers."

"They've gone to a lot of trouble to get us already," Haines declared sourly. "They don't want us to escape now, when you may have thought of something that might help them."

More of the tapping was going on, and Carson waited.

"They're speaking to me, but I don't quite get it. I'll ask them to repeat," Nora said.

The tapping started on Nora's foot,

more slowly this time.

"They're telling us to take care of ourselves," she interpreted. "They say that they know of a way of escape for themselves, but it would be too narrow for us to follow, and they won't use it unless they are forced to. Meanwhile, we're not to worry about them, and do our best not to get caught."

"You can promise them we'll do our best." Carson grinned humorlessly.

"The chances are," muttered Haines, "that it won't be good enough."

They were moving again. Ahead of them this time there showed a dim light—the light of the tunnels built by the topknotted Mercurians. They reached the place where their own passage joined the lighted one, and stopped. Fifty feet ahead of them was a group of waiting figures.

"It looks like the showdown," Carson said, and licked his lips.

A tall figure with a purple topknot separated itself from the group waiting for him. It was the king of the Mercurians. Carson watched tensely as the distance between them narrowed. If there were any signs of treachery, he intended to be the one to shoot first.

The figure of the king came to a stop. His three eyes were fixed unwinkingly on Carson in that cold stare of his, but at first he said nothing. Then he spoke slowly.

"Why are you with our enemies?"

"They're not my enemies. Why shouldn't I be with them?"

"You have promised to help us."

"I know I did," Carson snapped. "But your race left me to die in the desert. Does it seem as if you wanted my help?"

"Those who left you to die have been punished. If you return to us, you will have aid in carrying out our plan to remake the planet."

"You promised me that I would have a spaceship in which to travel back to Earth," Carson told him. "But the ship is damaged and can no longer be used. What do you intend to do about keeping your promise?"

The king paused.

"Seeing that you can not help us, it does not matter," he replied coldly.

"I can help you plenty. But you're

not going to learn how until I choose to tell you," Carson declared.

The Mercurian was studying him again, as if trying to decide whether he was bluffing. Then he retired and, along with his followers, began to retreat slowly.

Carson was puzzled. Nothing in the king's manner had given him any reason to believe that the Mercurians would change their plans to capture him. Nora touched his arm.

"It's a trap," she said in a low voice.

Carson nodded. It was a trap, but he had no idea of what kind.

"Maybe we'd better get back," Haines said anxiously.

"We don't know whether that will do any good. I have a feeling we ought to get out of here, all right, but in what direction—"

ONE of the wheelbarrow-like conveyances that Carson remembered from his first visit to the underground passageways had come into view, riding easily on tracks that were almost invisible in the ground. As it approached, they saw that it was empty.

"What's the sense of that thing?" Haines said.

"They may be using it as a shield, hiding behind it," Nora suggested.

Carson shook his head.

"No, there's no one behind it. I can't figure it out."

Nora cried out suddenly.

"Look! There's another one coming from the opposite direction."

All three stared at the second barrow.

The crawlers had been moving about unobserved. Now a door opened in the gray walls.

"Quick!" Carson urged. "Get through here."

Nora slipped into the narrow tunnel, with Haines so close behind her that he almost trod on her heels. Carson stepped in after them, and they started to follow the crawling animals.

Behind them the two barrows approached each other, seemed to hesitate for a moment, and then made contact. There was a flash that revealed the walls of the tunnel for a hundred

feet ahead. Then the two conveyances, molten into a single shapeless lump of metal, lay motionless on the ground.

CHAPTER XVII

Trapped

THE tunnel in which they now moved was without lights. That meant that it had been built by the crawlers, and was less likely to offer unpleasant surprises. It was also less convenient to pass through. Carson had a feeling of relief when they finally reached another of the gray-walled, dimly lighted passages built by the topknotted Mercurians.

The party advanced a few hundred feet and stopped again. Behind them was a group of the topknotted figures, coming slowly after them.

"We'd better go on," Carson decided. "Even if they're going to catch us after all, there's no sense in making things too easy for them. And I have an idea that when they finally come to grips with us, they're going to be sorry. This business of being hunted all the time is getting on my nerves."

Nora shook her head.

"We can't go on. Our path is cut off in front too. See—there's a group ahead of us."

"All we need is another door in the wall," Haines growled.

A door had in fact opened. But the tunnel into which it led was an extremely narrow one, large enough for the crawlers, but far too small for the human beings or the topknotted Mercurians to follow.

"That's what the crawlers meant when they told us they could escape themselves," observed Carson. "They've honeycombed the walls with such small tunnels, just for the sake of such emergencies. Better tell them to go, Nora. They can't help us."

Nora tapped on one of the shells, and the creature entered the small tunnel. The others followed, and soon the last one had disappeared behind a bend.

The group of pursuing Mercurians, as well as the one in front, had halted.

"They know we're trapped, but they're not in a hurry to get us," Nora observed. "Maybe they wanted the crawlers after all."

"More likely they're not exactly in love with their job," Carson said shrewdly. "Or else they want to take us alive, and are not sure how to go about it."

They could see the leader of the Mercurians in the center of the group ahead of them. After giving a few directions, he retired to the rear.

"If he was human, I'd say that he was afraid," Carson remarked. "But as these Mercurians don't know what physical fear is, it's more likely that he's merely being prudent." He was silent a moment. "They certainly appear to respect us pretty highly. And that gives me an idea."

"I hope it's better than most of your ideas," Haines snorted.

"It'll do. Our only way out is through the Mercurians, either the front group or the rear one. Why not do the unexpected, and cut through them?"

"You mean, attack first?" Nora asked.

"Exactly. They're busy making up their minds as to the best way to get us, and it's about the last thing they'd imagine we'd do."

"There's the matter of those guns," Haines pointed out.

"We'll have to take our chances on that score," Carson admitted. "We have several guns of our own. But in order to use them, we'd have to be within range of theirs. I might try to confuse them by throwing something, but I've done that before, and I should think they're on to that trick by now."

He could see that Haines was thinking hard. The expedition leader seemed a little pale when he spoke.

"Your idea's all right, Carson, except for one thing. But if you'll let me have one of those guns, I might be able to do something about it."

CARSON put one of the metallic rods in his hands.

"You squeeze the blunt end, and the ray is projected out the other," he explained.

"I know that," Haines replied impatiently, and hesitated.

Then he put the sharp end rapidly against his own arm. Before Carson could stop him, he had pulled the trigger.

Nothing happened.

"Haines, you fool, what the devil—"

"We had to find out, didn't we?" Haines said coolly. "We're sure to get hit by these rays later, and we'd better learn now what effect they have on us."

"You didn't have to try the thing out on yourself!"

"Sure, I should have tried it on you," Haines snorted. "But I had an idea it wouldn't be very harmful. The ray may be deadly to all kinds of Mercurian life, but that doesn't mean it should affect anybody that comes from Earth."

"Confound it, man, it's energy—"

"We don't know what kind," Haines pointed out. "Is it ultrasonic, electromagnetic or gravitational? They don't all act the same."

They waited in a strained silence.

"Well, you're still alive," Carson said with grudging tolerance. "I never thought I'd be glad about that, but I am. And it means that we don't have to fear the Mercurians' guns—and they do have to fear ours."

Carson gazed at the two groups of hostile topknots.

"They've seen what you've done, and they're puzzled about it. I don't blame them. They don't know what to do. We'd better attack fast."

"Which group?" Haines asked tersely.

"The one in front. Their ruler is there, and they'll have to keep busy protecting him. In addition, we're more likely to catch them off guard there."

"Leave your insulated suits here," he directed Haines and Nora. "We can't fight inside them. And follow me as closely as you can. I'm going to create a little excitement among these Mercurians, and you should be able to get through before they can collect their wits."

Carson began to run. He knew the danger, with the gravity so low, of hitting the roof of the passageway, so he kept his head down and took huge twenty-foot strides. The Mercurians

had just time to raise their topknots in alarm and stare at him stupidly before he was among them, smashing into them as fast as his arms would move.

The Earthman knew their weakest point by now. He wasted no punches, aiming for the lung slots and paralyzing the creatures at a single blow.

In about ten seconds Carson had cleared a way through the front ranks. But behind these there were others, stretching away far down the tunnel. He knew that energy rays were hitting his body from behind as he ploughed into the Mercurians in front of him.

As they saw what had happened to the rest, they gave way before him. In a moment or so Carson had reached a side passage that was practically free of Mercurians. A path of escape lay before him.

He turned around. Neither Nora nor Haines was in sight.

They were lost behind the crowd of Mercurians that had come together again behind Carson, hopelessly separated both from him and from each other.

He plunged back into the thick of the fight, his arms flailing as before. Then he saw that both Nora and Haines had been overcome, and were being carried away faster than he could get to them. Mercurians were throwing themselves in front of him without hope of success, simply to obstruct his path for a few seconds, delay him until the other captives could be carried away.

Carson uttered a hoarse cry that went no further than his own oxygen helmet. Then he had his own gun out and was shooting to kill. The Mercurians shriveled as the rays hit them; but others, undaunted, kept coming on.

A FEW yards away from where Carson stood, the king was calmly giving directions. Carson hurled himself at the ruler, his gun mowing down the different members of the monarch's bodyguard. If the enemy had Nora and Haines, then he would have a hostage of his own.

The king saw him approaching and tried to draw back, but not in time. Carson's fist smashed into the Mercurian's lung slots. As the ruler fell gasp-

ing to the ground, the Earthman picked him up and threw him over his shoulder. Then he ran.

He was pursued down the side passage. But after that, when he turned down another of the connecting tunnels, none of the Mercurians dared to follow.

A half hour later, when Carson was sure that he had shaken off pursuit, he set the Mercurian down on his feet. The king had revived completely by then. As far as Carson could see, he had suffered no loss of dignity from what had happened. But there was greater hate than ever in his eyes.

"What do you want of me?" the ruler asked.

"I intend to make sure that your men have a good reason for not killing my friends," Carson declared.

"Your friends will not be killed. We wish to discover whether they have learned anything that can help us."

"And if they haven't?"

"Then they will not be important, and it does not matter what happens to them."

Carson frowned.

"In that case," he snapped, "you will not be important to me, and I'll see that plenty happens to you."

He paused, regarding the monarch with intense dislike. After all, what he wanted was not revenge but freedom for Nora. If he could scare the king into a state of mind where he'd be willing to exchange her life for his own, Carson would be satisfied.

But, unfortunately, it seemed as if the king didn't scare. Not for himself, anyway. Maybe, though, he'd be afraid for his people.

If Carson knew the solution they had been looking for all along, the ruler might be anxious to exchange the information for a pair of human lives that meant nothing to the inhabitants of Mercury.

"I know how to make part of the cold side habitable," Carson said as his first move.

"I thought you might know. That is why we especially wanted to capture you, instead of your friends."

Carson noticed that the king was staring down the tunnel expectantly.

He might have seen something that offered a hope of escape. Carson moved closer to him. The next moment he saw what the ruler had been looking at.

A fuzzy and brilliantly-colored animal about a foot long, much like a giant caterpillar on eight legs, had come around a corner and was slowly moving toward them.

The animal was not afraid of them. That meant that it was accustomed to the company of the topknotted Mercurians, and did not run wild. In that case, there might be other Mercurians around. Maybe that was what the king was counting on.

"We're moving again," Carson ordered.

The king did not object. The two followed the tunnel in the opposite direction from that by which the animal had come. It padded along with them, apparently glad of their company. There were no signs of any other Mercurians.

They came to a stop again after a few minutes. There was one of the wheelbarrowlike conveyances abandoned on its track. The sight of it suddenly aroused suspicion in Carson's mind. He remembered what the Mercurians had tried to do with a pair of these wheelbarrows only an hour or so before.

"If my information is important," he demanded, "why did you try to kill me and my friends a little while ago?"

THE king looked at him in surprise.

"We made no effort to kill you."

"You tried to electrocute us," Carson indicated the wheelbarrow.

"But the charge would not have killed, only stunned you. We decided that human beings are more resistant to electricity than Mercurians. We had no idea you were in danger of death."

"If you decided that, you made a bad mistake," Carson snapped.

"You are still alive," the king said.

"What has happened before is no longer important. What is your plan for making the cold side habitable?"

Carson took the plunge.

"My plan involves raising the temperature of part of the cold side only. Your people will have more space to live in, but the greater portion of both

the cold side and the hot side will be unchanged. The crawling animals will need them for themselves."

The king's topknot lowered slightly in anger, almost hiding his eyes. He didn't like to hear Carson talking of the crawlers as if they had any rights at all.

Carson went on.

"There will be huge boilers erected on the hot side, containing a suitable liquid, such as water, to absorb the sun's heat."

"Water is scarce on Mercury."

"Not far down under the hot side. There are underground streams."

"We know that. But they are inaccessible to us. That is where the crawlers live."

"Then there will have to be friendship between your race and theirs."

"That can not be," the king said coldly. "They kill the plants that are important to us."

"Those plants won't be very important any longer, if you have another method of getting water," Carson pointed out.

The king was silent. Waiting for the rest of the plan.

"The liquid will be transferred to the cold side without losing its heat. It will be used to warm the edge near the Twilight Zone, thus making it habitable."

"No liquid can be transferred without losing its heat," the ruler sneered.

"I have discovered a perfect insulating material."

"There is no such material in the Twilight Zone," the ruler declared.

"It exists in the tunnels inhabited by the crawlers."

The king's eyes burned with anger.

"They are our enemies, I tell you," he snapped. "We can not work with them. Moreover, to transfer the liquid across the Twilight Zone will take a system of huge pipes. Building them will require many lifetimes, even of such long-lived beings as those of Earth."

"The pipes will take a long time to build," Carson admitted. "But there will be no need to wait for them. There is something which can be used at once, as soon as the pumps for driving the liquid are manufactured."

The king was perversely expectant again. Perhaps, Carson thought, there was a wild scheme going on in his mind of finally exterminating the crawlers and taking the tunnels they lived in, along with the water and the insulating liquid. It would be like him to prefer that to friendship.

"Instead of pipes," Carson said, "the plants you now use to bring water from the interior of the planet can be used. The heating liquid will flow in them very well."

"The high temperatures will mean death to them."

"Sure it will," Carson agreed. "But as I have already said, you won't need them any longer."

"Your plan is entirely useless," the king said coldly. "We do not intend to kill the plants we need. We will not establish friendship with the crawlers."

That sort of reception might have been expected, Carson thought. His idea was good, he had no doubt of that. The distance necessary to transport the hot liquid would be only a few hundred miles at most, in order to double the habitable area of the planet and make it useful to the topknotted Mercurians.

IT might even be feasible to heat up the whole cold side later on, if there was a sufficient supply of the insulating liquid. But Carson hadn't intended to tell the king that, for fear of seeming to promise too much.

Now he decided that no matter how much or how little he promised, it wouldn't have made any difference. The king would have been against the plan anyway if it meant friendship with the crawlers.

The other ruling-caste Mercurians would probably feel the same way about it, if they learned. And that would mean the end of any hope for Nora. Carson realized now that it was more important than ever for him not to permit the Mercurian monarch to escape with what he knew.

The caterpillar animal had been moving around restlessly. The king scratched its back and then, turning to Carson, asked an unexpected question.

"Where do you intend to take me?"

"Never mind that. You just come

along where I tell you to."

"But the tunnels form a labyrinth," the king smirked. "It is impossible for you to find your way out."

Carson hesitated.

"I'll find my way, all right," he said, with a confidence he didn't feel. "Leave me to worry about that."

There was the equivalent of a smile in the ruler's eyes. But he said nothing more.

The caterpillar animal had stopped before something that resembled an outcropping of black crystals on one of the walls, and begun to eat. The seeming crystals were alive, squirming slowly as the small animal pursued them and gobbled them down.

Carson wondered for a moment whether the animated crystals could possibly afford nourishment for him. He would begin to need food soon. More important than that, he would need air.

Near the living crystals was a small brown amorphous growth. He noticed that the king shied away from this, as well as from the crystals, although the animal paid the brown growth no attention. Instead of food, Carson decided, the crystals would probably be dangerous both to him and to the topknotted Mercurians.

He started on the path that he figured would lead downward, ordering the king to follow. The ruler moved as he directed, with the animal trailing after.

CHAPTER XVIII

The Search

CARSON might have known that it would happen. As they moved further down, they left the lighted tunnels of the topknotted Mercurians, to enter one of the dark tunnels of the crawlers. The darkness gave the king his chance. He was gone even before Carson suspected the ruler was trying to escape.

The caterpillar animal remained, however, and Carson was glad of its presence. It gave him a feeling of com-

panionship in the darkness of the tunnels. And it would aid him to detect the presence of strangers. It appeared to be entirely at home in the dark, which was more than he could say for himself.

At the end of two or three hours, Carson admitted to himself that he was lost. He began to have a growing feeling of despair. The animal on whose sense of direction he had foolishly counted seemed to be doing nothing more than wandering aimlessly about. It was not until he came across one of the huge killer plants, however, that he finally felt he had reason to hope.

He began immediately to slash through the hard bark toward the core of the plant. The streams of water under the hot side were under the control of the crawlers, and inaccessible to the other Mercurians. But the flow of water inside the pipe was from the depths of the cold side toward the hot side.

Carson put his hand into the moving liquid, felt the slow pressure on his palm. Then he began to follow the plant in the direction toward which the water was flowing.

By the time he had been walking three or four more hours, he noticed a perceptible increase in temperature. He was on the right track. He kept going confidently.

The caterpillar animal was still with him, walking more rapidly as its body warmed up. Now it stopped abruptly, its eyes fixed on something moving in the distance.

Carson saw a light, dancing slowly up and down. One of the living winged lights! Then another came to join it, and the two lights began to recede gradually in the distance.

They were off to one side of the killer plant by which he had been traveling; but wherever they were, the crawlers would be nearby. He turned resolutely aside from the killer plant, and followed them.

Carson came close, and then they disappeared. They had turned into a side passage. He raced forward clumsily in the dark, caught sight of them again and ran after them. He couldn't afford to lose them at this stage of the game.

He was within a few yards of them when they seemed to go out. They hadn't turned around another corner, Carson could have sworn to that. There had been no corner to turn. They had simply extinguished themselves, making it impossible for him to follow them.

Carson cursed softly to himself, and the muscles of his jaws tightened. In those few hours that were left to him, he would go forward. There was a chance, just a faint chance, that he would come across something—

He felt a series of taps on his right foot.

Safe!

Carson couldn't understand the crawlers, but they could understand him. Immediately he flashed an image of a spaceship on the walls of the tunnel. He pictured them leading him to the ship, and himself entering it.

One of the crawlers tapped again on his foot. The answer was "no." They didn't know where the ship was.

Carson projected an image of an electroscope, showed them how he would make the instrument. This time they hesitated. But when the answer finally arrived, it was no longer "no." It was "follow us."

With the crawlers to guide him, and with the winged lights that the small animals provided to see by, Carson moved through the tunnels toward the hot side, at more than twice the speed at which he had formerly made his way. They had reversed their direction, and the passages were becoming perceptibly colder.

AT A BEND in one of the tunnels, they discovered the body of the Mercurian king. It was covered with a gray amorphous growth, and looked half decayed. The ruler had fallen a victim to some of the microscopic life in the tunnel. Carson glanced at the body briefly and hurried on.

He followed the crawlers another half hour, with his oxygen almost gone, and then he stopped in surprise.

They had brought him to an ancient laboratory, long deserted. It had evidently been the property of the ancestors of the topknotted Mercurians. Now it lay thick with dust, strange in-

struments such as Carson had never imagined lying around, waiting to be used by someone who understood their purpose.

In one corner, Carson saw the dust particles swirl around slowly. There was a draft from one of the tunnels. It came from deep down in the planet, where the atmosphere was denser. Immediately the Earthman took off his helmet, to find the air breathable. Then he began to look around.

He did not touch the more complicated devices. What he wanted was simple enough. A few sheets of lead, some gold leaf—

After a search of a few minutes, he found them and immediately set to work. The crawlers watched him with puzzled interest.

* * * * *

When Carson had completed his electroscope, he found that there were two directions from which powerful ionizing radiations were being shot at him.

He had remembered that the hull of the spaceship in which he traveled had been made radioactive, in order that it might operate the meteor-repellent device. The ship for which he was searching was in one or the other of the directions from which the radiation came.

Or, possibly, there were two spaceships.

He chose one of the directions at random and set off, with the crawlers taking the lead. In a short time, they had led him to one of the tunnels laid with rails, and secured several of the wheelbarrow conveyances. Carson got in one of them and set off.

The journey took longer than he had expected. When they finally did approach the source of the radiations, the electroscope was so strongly affected that he was forced to shield it with a lead screen. The crawlers themselves began to show signs of uneasiness. Finally, the barrow came to a stop. The crawlers refused to go further. Carson tapped on one of the shells.

"Follow me," he said.

They remained motionless.

There was danger; he understood that. He got out of the barrow, and started to walk. Then suddenly, around a bend of the tunnel, he saw

the source of the radiations.

There was a huge mass of luminous rock—radioactive ore. But there was no sign of a spaceship.

Carson's disappointment was so acute that for a moment he remained rigid, simply staring at the ore. Then he turned his back to it and walked slowly away. The other source of radiation might be no more than this. In that case, the report of an existing spaceship was no more than an idle legend—and he and Nora and Haines would never get off the planet.

The crawlers seemed to understand what was going on in Carson's mind. They started off toward the other source of radiation, without his having to say a word. He removed the shield from the electroscope, and waited with feverish impatience.

The barrowlike conveyance moved with steady speed, shooting without hesitation around curves and up steep underground passages. For a short period they traveled in complete darkness, and Carson had not the slightest idea of his surroundings. But from time to time he caught a glimpse of the electroscope. The gold leaves were standing further and further apart. He was getting close to his destination.

SUDDENLY he found himself in an enormous underground chamber. At first he did not realize how great its extent actually was, for the walls faded away in the darkness. But after a few moments, several floating lights swept through the chamber, and he could see how far it stretched.

In the middle was the large gray object for which Carson had been looking. It was a spaceship, an exact duplicate of the one in which he had traveled.

His first rapid examination failed to discover a single part of the apparatus out of order. He had a feeling that it must have been standing here for centuries, but it was surprisingly clean, as if prepared for him specially.

The outer hull seemed to be undamaged. When Carson entered the ship, he discovered the inner parts in apparently perfect order. He kept telling himself that he didn't believe it. There could be a thousand things wrong that his unpractised eye would fail to dis-

cover. He would learn about these defects when he tried to operate the ship.

He examined the starter, the fore and aft rocket controls, the side rockets, the meteor repellors. Nothing wrong in any of them. Then the fuel tanks—and he knew why the ship was resting there so peacefully, instead of being used by the Mercurians.

There wasn't even enough fuel to take it out of reach of Mercury's low gravity, much less to brake its fall once it reached the heavier planet of Earth, to come under the influence of a greater force.

Carson looked upward. The ceiling appeared to be solid, and there was no indication by what path the ship had been brought into this chamber. Probably there were retractable doors of some sort that operated by means of a switch or lever some place in the chamber.

The crawlers had followed him into the ship. Now they were waiting patiently for him to do something. It would be a pity to disappoint them, Carson thought. He switched on the lights and closed the door. There was just a trace of fuel in the ship altogether.

One of the crawlers was tapping him on the foot again. Carson looked down at the small creature curiously. Those six taps again—they wanted him to follow. But that was absurd, because they were in the ship, making no move to go any place. Then he thought he understood. They wanted to follow *him*.

He flashed a series of ideographs. "Where shall I go? To the cold side?"

"No." The answer came quickly.

"To the hot side, then?"

"Yes."

"Do you want to get to the tunnels where you live?"

"Yes."

Carson asked the next question and waited anxiously.

"Do you know where to get fuel for the ship?"

They hesitated.

"Yes, no," came the reply.

They were doubtful. But as long as they had some plan, there was no harm

in taking the ship to the hot side.

"Shall I take the ship far into the hot side?" he asked once more.

"No."

"Near the edge?"

"Yes."

"Near where you first discovered me?"

"Yes."

That was clear enough, then. All the same Carson hesitated. There was so little fuel left that he hated to waste it. If only he could have guessed clearly what they had in mind—

The tapping began once more.

"Come."

It was up to him to get going.

CARSON'S hand closed on the starting switch again, and this time he threw it and set the bottom rockets to blasting. The ship rose with a jerk that almost knocked him off his feet. In a fraction of a second it was at the roof of the chamber. By the end of the same second, it was several hundred feet past.

The green flash of the meteor repellers had blasted the roof out of existence. No need to open the doors with a device like that on the ship.

Carson shut off the bottom rockets, turned on those at the rear, switched them off again, and then waited as the ship began to fall under the influence of Mercurian gravity.

It gathered momentum. But just as it was about to land, he switched on the bottom rockets again, gently this time. The ship came to a slow stop, resting not quite horizontally on the rocky surface of the ground.

Looking through one of the side windows, Carson could see the blinding white light of the sun reflected from the bare rocks. He was on the hot side once more, near the place he had aimed for, stranded this time without an insulated suit. He would be forced to remain inside the ship.

The crawlers were clambering up to the windows, looking out to examine the surface of the desert. They would be able to travel here. But they would not be able to take Carson with them.

One of the crawlers had descended to the floor of the ship again, and began to tap on his foot. The usual six

taps. They were telling him to follow them.

Carson wondered for a moment whether these small animals resembled human beings in having the ability to go crazy. The temperature out there was high enough to melt tin or lead. He himself couldn't face it without protection.

The crawler repeated the six taps. The animal was impatient, Carson thought. He threw open the door of the ship, and they trailed each other out. Then he closed the door and returned to one of the windows, watching them. They crossed about a hundred feet of heated ground, and then disappeared into a dark opening that was obviously the entrance to one of the tunnels leading to where they lived.

Carson understood now. That was what they wanted him to do. And in that unbearable heat.

He looked outside again, frowning, and then his face cleared. He had forgotten the ship itself. Its shadow was long and broad, almost in the direction in which he wanted to go.

He made up his mind.

He opened the door of the ship, dropped to the rocky ground and ran. He could feel the radiation from the heated rocks searing his face; then he was at the edge of the shadow, plunging toward the dark opening. As he sailed slowly through the air, his eyes closed, the sun's light seemed to burn through his lids and hit his eyeballs with a fierceness that knocked his head back. Then he was surrounded by the welcome darkness, broken only by the illumination of the winged lights far ahead of him.

Carson plunged after them. He could feel the heat of the passageway growing less by the second, and when he had been running for a couple of minutes he slowed down. It was no longer so hot as to be intolerable. In front of him, the crawlers were moving along at a moderate pace. He followed them.

In no more than five minutes, they came to a full stop. Others of their kind were advancing to meet them. And in the midst of the newcomers, Carson noticed, was a topknotted Mercurian, probably a prisoner. He was short,

with a green topknot.

He saw Carson, and an ideograph flashed on the ground. Carson stared at him, and a slow smile creased his face. It was Dorn, who had taught him the Mercurian language.

CHAPTER XIX

Time Grows Short

CARSON'S first question was about Nora.

"The two from Earth are still alive, but they will not remain so for long," Dorn told him.

"Why?" Carson grew tense. "What is to be done with them?"

"A new king is to be chosen. When he is selected, they will be put to death."

Carson began to sweat.

"When will that be?" he asked.

"They are being held near the spaceship that was wrecked. They will die at the moment the sun sinks below the horizon."

Carson nodded slowly. The long day of the Twilight Zone was coming to an end, and the sun's shadow was gradually approaching from the cold side. When it reached the spaceship, the coronation of the new leader would take place, and Nora and Haines would be put to death. But Carson had no more than a vague idea how soon that would be.

He questioned Dorn further on that point. He gathered finally that because of the oscillating nature of Mercury's axis, the sun's shadow was now advancing toward the ship at the rate of perhaps two miles a day. And it was now within almost a mile of Nora.

Carson had about twelve hours left in which to act.

"When was it discovered that the old king was dead, and that a new one must be chosen?" he asked quickly.

"It is not known that the old king is dead."

"Then why is there to be a new one?"

"When the king has been taken away from his people, he is no longer their leader. Even if he returns, he has lost his authority."

So the old ruler had been stringing him along all the time, Carson reflected.

"Why have you left your people and entered the tunnels of the crawlers?" Carson asked next.

"To escape being put to death," Dorn replied candidly. "Those of the purple topknots have given up the plan to remake the planet so that we might be able to live on either side."

"And you protested?"

"They would have killed us even if we had failed to protest. There are too many of us to live in the Twilight Zone. If a few die, it does not matter. Moreover, those of us who have green topknots are the teachers of what science is left. To put an end to any possibility of reviving the plan, the purple ones wish to destroy us."

"How do most of your people feel?" Carson wanted to know.

The green topknot drooped slightly. "They are not important, but nevertheless they wish to live."

"I can understand that. Do you think that if a suitable plan were to be proposed, all those except the purple ones would favor it?"

"All but the purple ones."

"Even if the plan meant friendship with the crawlers?"

"The crawlers destroy the plants that bring us water."

Carson thought that one over.

"What if I were to show you another source of water, which doesn't depend on the existence of the killer plants?"

"Then we would favor friendship with the crawlers. The killer plants take many of us who do not wish to be taken."

Carson breathed a sigh of relief. That was the first step. He had been afraid that he would have difficulty persuading the topknotted Mercurians to accept the plan. Once they were willing to live on good terms with the crawlers, everything else would be easy.

Then Dorn threw a monkey-wrench into Carson's ideas.

"If you have a weapon to destroy the purple ones, it will be well," he said. "The people will then be willing to believe you."

"You expect me to destroy the purple ones by myself?" Carson exclaimed.

"The people are afraid of them."

The hopes that Carson had built up during the last few moments suddenly collapsed.

One last desperate hope remained.

"Is the wrecked spaceship still where it was when it landed from Earth?"

Carson asked tensely.

"It is still there."

"And the fuel has not been removed?"

"There is no fuel," Dorn told him.

Carson suddenly felt sick in the pit of his stomach.

"What has happened to it?" He got the words out finally.

"It was scattered by the same explosion that wrecked the ship."

So even that last plan was out.

In the Twilight Zone, the sun's shadow was advancing at the rate of an inch or two a second. Carson's heart pounded as he thought of that slow relentless crawl, whose approach meant death to Nora. If only he had a weapon of some sort, something that could be used at a slightly greater distance than those energy guns, he would take the risk of tackling the whole race of top-knotted Mercurians.

But the crawlers had no weapons that he could possibly use. They were not a warlike group.

And yet the flyers had left them alone, as if afraid of them. That was odd. The flyers hadn't been afraid of the topknotted Mercurians.

Carson turned desperately to the group of crawlers that had escorted Dorn, began to speak to them in the ideograph language. One of them advanced slightly and tapped on his foot. He understood what Carson was saying.

The images flashed more and more rapidly. Nora had taught him only their signals for "yes" and "no," but these were enough. Carson threw one question after another at the watching animals.

* * * * *

THE Mercurians had been having a queer and sometimes angry debate, and as long as Nora was permitted to watch it, she did so with fascination. They had been discussing in what manner she and Haines would die.

The Mercurians' discovery that their energy rays were not deadly to the beings from Earth came as something of a shock. There was also a belief, Nora perceived, that the human beings would not be greatly hurt by an electric discharge. And as the topknotted Mercurians had no other ways of inflicting death in their ceremonies, they were somewhat at a loss as to what to do.

At the same time, they had massed in great numbers near the wrecked spaceship, and had posted sentinels. Without weapons, Carson had no chance of making a rescue.

Around the two prisoners, the shadows of even the smaller rocks stretched far toward the cold side. Night would soon fall on that part of the Twilight Zone where they were now held.

Death would come when the sun sank below the horizon.

Haines had been quiet and troubled. Suddenly, as he paced restlessly back and forth on the rocky ground, his head jerked up.

"I've been wasting time like a fool," he snapped. "We might just as well try to escape as wait for Carson."

"How? We're being carefully guarded."

"These Mercurians want something. Why not pretend we can help them get it?"

"I don't see what—" Nora began.

"Suppose we ask them to take another trip to Earth. We'll say that once we reach there, we'll be able to select engineers who can really be of some use to them."

Nora shook her head.

"They'll never fall for that, Frank. And anyway, the Mercurians have no way of getting to Earth again."

"I'm not so sure. If there's a spaceship somewhere, they've got a better opportunity of finding it than Carson has."

"We'd be better off if we didn't remind them of it."

"You're wrong, Nora," Haines said stubbornly. "I'm going to talk to them."

In a moment he had run over to a Mercurian guard and was flashing ideographs on the ground. Nora watched helplessly as the guard led him away.

ABOUT an hour later, Haines was brought back.

"Well, did they believe you?"

"I don't think so," he answered slowly. "They're going to kill us anyway. But Carson was right. There is another spaceship in existence."

Nora's heart skipped a beat.

"In the underground passageways,"

"At the edge of the hot side. Carson's got it now. But they think he's without fuel. They're sending out an expedition to capture it."

"But they won't be able to!" Nora exclaimed. "The crawlers won't let them!"

"They have ways of killing the crawlers. In a short time, they say, they'll have possession of the ship."

He turned away dejectedly.

"What will happen now," Nora asked. "Will they send to Earth again?"

"I don't know. But if they do, they won't send us along."

* * * * *

Meanwhile, it was impossible to guess what emotion the leader of the crawlers felt, or whether he felt any emotion at all. But in Dorn's attitude, Carson could still read traces of doubt and suspicion.

They were in a tunnel where the air pressure was sufficiently high for Carson to breathe without his oxygen tank. Dorn was wearing a helmet like the one Carson had first seen long before, caught on the body of a shark, before the Earth trio had been abducted into space.

Many of the crawlers stood around motionless now, waiting to learn what the decision would be.

Carson flashed a sharp image.

"We must speak rapidly, Dorn, for there is little time. There must be friendship between your two races. You no longer have any reason for being enemies."

"If the crawlers will supply us with water, we shall be friends."

"They will do more than supply you with water. They will carry out that plan I was thinking of, to increase the amount of territory you inhabit. You'll be able to live on the surface, and get away from those radiations under-

ground."

"And then they will destroy the killer plants?" Dorn persisted.

"They will. They hate the plants because the plants try to kill so many of them. And though you yourselves hate these plants, you have been protecting them because of your need. But you will need them no longer."

"It is true," Dorn said slowly. "Let the killer plants die. Our king planned originally to spread his rule over the entire planet. He planned to exterminate the crawlers that the plants might live. That part of his plans he kept secret from you. But when he attempted to carry it out, it might have led to our destruction. Friendship with the crawlers is better."

"Good!" Carson, feeling oddly elated, turned to the crawler leader. "Do you understand?"

There was a series of quick taps.

"Yes."

"And you agree also?"

"Yes."

"Then we go on to this question of fuel for the spaceship," Carson said quickly. "You do not know how to make use of atomic energy?"

"No."

"But you do have a substitute high-energy fuel?"

"Yes."

"The solar rocks?"

"Yes."

"Is it difficult to learn to use them?"

"No."

"Will you show me how?"

"Yes."

The crawler leader tapped on his foot. He was saying something more than "yes," but Carson couldn't understand him. And the time to puzzle out what the crawler meant was growing short. He turned to the topknotted Mercurian.

"Dorn, do you understand the language of the crawlers?"

"I understand a few words."

"What is he saying?"

THE Mercurian waited while the message was repeated to him.

"He knows not only how to make use of the energy already in the solar rocks, but also how to store energy."

"You mean, directly from the sunlight?"

"Yes." The crawler replied to Carson himself.

"And is that difficult?"

"No."

"You'll show me how it's done!" Carson exclaimed. "But first, there's something else. My companions are in danger. And I have a plan to save them, but I don't know whether it will work.

"Dorn, the reason the flyers fear the crawlers is that the latter know how to release clouds of oxygen, which when concentrated is poisonous to most forms of Mercurian life."

Dorn nodded.

"It is one of the poisons we fear on the desert," he conceded. "It is released by some of the rocks. The crawlers can secure it in liquid form."

"Where do the crawlers get their supply? They don't transport it all the way from the cold side, do they?"

"All Mercurians know that it comes from underground," Dorn said. "Our planet is a small and ancient one, and no longer has a hot core. The highest temperature is on the surface of the hot side. The further one goes into the interior, the colder it becomes.

"Not far down, there are rivers of liquid air. That is why the tunnels have a slightly higher air pressure than the surface of the planet. On the cold side, however, the air emerges in some places still liquid."

"Do the tunnels lead down as far as the rivers of liquid air?"

"Yes." The crawler leader answered before Dorn could flash an image.

"And that air can be brought to the surface in one place, and sent out over the planet in a given direction?"

"Yes."

"But wouldn't it spread through the whole maze of tunnels and be dissipated before getting to the surface?"

Carson waited while Dorn translated the reply.

"No. It is possible to shut some of the tunnels off from the others. The crawlers have long been able to bar certain tunnels against us. They can guide a current of gaseous air as they please. But they can not handle it so well while

it is liquid."

"They won't have to bring it up liquid," Carson declared. "But there is no further time to lose. We must act."

The leader of the crawlers was giving directions, and the small animals were scattering. The creatures ordered Carson and Dorn to follow, and led them rapidly down through a series of steep tunnels.

It was getting colder as they went, but the crawler leader had taken along with him one of the solar rocks. As its flickering green light began to illuminate their path, they felt a glow of warmth.

Carson looked back and saw that a long procession of crawlers was following them, each carrying one of the rocks. Others were converging from side tunnels, joining the procession. Carson had not known so many of the animals existed.

"Are there many of the crawlers altogether?" he asked Dorn.

"More than there are of us. That is why our king's plan to exterminate them was so mad."

"And they all live underground in these tunnels?"

"The tunnels stretch far beneath the hot side. There is room in them for millions of crawlers."

"But what do they do there?" Carson wanted to know.

DORN'S three eyes blinked.

"They exist as we do. They create food from the rocks, and feed it to the animals they themselves eat. What more is there to do?"

The crawler leader had stopped. Several hundred feet below them was a sluggish stream of liquid air. The crawlers were taking up places beside the stream now, as the leader began to tap out a message.

"The energy is released from the solar rocks anti-catalytically," translated Dorn. "It is first set off by a chemical reaction, and then continues of itself. Further, I do not understand. You are asked to observe."

"But what chemicals are necessary?"

"There is iron, and bismuth, and fluorides of certain metals."

Carson watched in fascination as the crawler's tiny hands manipulated the chemicals. The solar rock was no longer being used for warmth, and the green light had been permitted to die away. Now one corner glowed a bright scarlet, with a fierceness that hurt the eyes.

"Come," the crawler tapped out, and began hastily to retreat.

Carson looked back. A cloud of mist was forming above the river of air. Where each rock had fallen, a white pool had sprung into existence. The liquid began to swirl rapidly. As far as Carson could see, the whole river seemed to be bathed in a fierce scarlet light that was reflected from every rock, seemingly to penetrate every corner of the tunnel in which they were.

There was the sudden, hollow, frightening sound of a dull growling, like the roar of a monstrous beast. The river was beginning to boil.

Abruptly and without warning, one of the fiercest whirlpools some distance away from Carson exploded. Where there had been a deep stream of liquid, there was now nothing but a layer of bare rock.

Stones were hurtling through the air. Carson collected his wits, turned to run through the scarlet-lighted tunnels. There came the distinct sound of another explosion, and after that it was impossible to distinguish one from another.

They merged into one vast howl that sent an intolerable wave of sound beating after the Earthman. The uproar was now so great that he could no longer hear it, but he could feel it in every fiber of his body.

He stumbled on, panting. He was running uphill now, and despite Mercury's lesser gravity, his lungs were beginning to feel the strain. A few feet ahead of him, Dorn was fighting desperately to keep going. The leader of the crawlers, moving as fast as he could, was between Carson and Dorn.

They passed a bend, and the howling of the explosions became less intolerable. And then the stream of air hit them with terrific violence.

Carson was knocked flat on his face. Ahead of him he could see Dorn fall.

The crawler leader, too close to the ground to be as greatly affected as they were, stopped moving and waited for the wind to pass.

But it didn't pass. The velocity of the wind rose. Even lying on the ground, Carson could feel it tugging at him, urging him forward. His body bruised, his mind dazed, he tried instinctively to rise, and felt as if a gigantic weight were crushing him to the ground. He lapsed into semi-consciousness.

IT SEEMED like an eternity later when the roar of the explosives ceased. Carson didn't realize it at first, because the screaming of the wind was still in his ears. But the scarlet light was gone, and the wind was tugging at him less violently. He could feel its intensity diminish from moment to moment.

Where there had previously been a deep stream of liquid air, there was now only bare rock. But somewhere ahead of him, Carson could hear a great current of air rushing through the tunnels of Mercury, up toward the surface.

The crawler leader was tapping on his arm.

"Come," he urged.

Carson rose to his feet. Dorn was already standing, evidently as bruised as the Earthman, but somewhat protected by his helmet.

"We must reach the ship," Dorn declared.

Carson nodded.

"What about solar rocks for fuel? What about food?" he asked.

The crawler tapped out a message.

"They have been put in the ship. Hurry," Dorn said.

They began to run again, up toward the surface.

CHAPTER XX

The Sun Stands Still

AT LONG last now the sun's shadow was only fifty feet away. Nora could hardly tear her eyes from it. A few more minutes to live—

Nora stared at the sun. She could see the merest trace of its upper edge, but it was still fairly light. For the solar corona, much less intense than the mass of the sun itself, had become visible, casting its fitful illumination upon the two helpless, condemned prisoners.

"What an astronomer wouldn't give to see that!" Haines said hoarsely.

A Mercurian with a purple topknot was making a speech, casting an endless series of images on the ground. As the minutes began to gallop by, Nora could no longer see the sun at all. Its shadow seemed to be racing toward her. Then it reached her feet, her knees.

A Mercurian approached. Now, Nora thought, she would finally learn on what method of execution they had decided.

The Mercurian stopped abruptly. The sun had suddenly leaped back *above the horizon!*

Nora rubbed her eyes. She had expected an attempt at rescue, but she had not expected a miracle. But the sun, blazing as fiercely as ever, was entirely above the horizon now. The shadow that had begun to envelop her had disappeared, thrown back again beyond the cold side.

"I don't believe it!" Haines muttered incredulously.

The Mercurians were staring at the returned sun in stupefaction. The speaker had lapsed into a motionless silence, at a loss for anything intelligent to say.

Nora's heart beat with sudden hope. If only these Mercurians were superstitious, if only they believed in miracles—

She caught herself, and began to laugh until the tears came to her eyes. After what she and they had seen, only fools could fail to believe in miracles. She was going to be safe. She knew it now. Safe!

The Mercurians began to collapse. Nora saw dozens of them bend over, their bodies racked as if in pain. Those who remained upright began to run as fast as they could toward the entrance to the underground tunnels. Within sixty seconds, the two prisoners had been left alone save for those who could

not get away . . .

Nora was no longer in any condition to be surprised when a spaceship dropped down out of the sky. Carson stepped from it, a green-topknotted Mercurian in a helmet at his side. Carson spoke rapidly to the Mercurian, and then came running toward the girl.

She could see his eyes light up as he caught sight of her, and his lips seemed to form words.

"Thank God!" the words might have been.

But Carson didn't pause to speak. He carried Nora into the ship, waited for Haines to follow, slammed shut the door and began to lift the vessel from the ground.

Even the pain of the rapid acceleration, straining at her heart and muscles until Nora thought they must give way, was pleasant to her. She was finally safe now. Safe, and headed away from Mercury, toward Earth.

She watched the stars spring into view as they put the bare, rocky planet behind them. Then the acceleration decreased.

"A little more than one gravity is enough right now," Carson said. "We won't pick up speed as fast as we did coming here, but I'll keep accelerating longer, and in the end it'll amount to the same thing. And it'll be more comfortable."

Then he noticed that Haines was staring at him in frankest awe. He heard the words that were forming on the other's lips.

"You stopped the sun, Carson. I didn't know it was possible. How did you do it?" he asked, bewildered.

"I didn't do anything of the kind." Carson laughed good-naturedly. "I'll explain in a moment, but first let me take a look at these controls."

HE CUT out the lower rockets, set those in the rear to blasting. A small meteor approached, to be swallowed up in green flame.

"I imagine the ship will take care of itself for a while now," Carson said. He laughed again. "Maybe you didn't suspect how well I can navigate among the planets. But I learned from the crawlers that the Earth and Mercury will be in conjunction about two-thirds

of a Mercurian year from now.

"That means a little less than two months, according to our way of figuring. And as I count on making the trip in a little over a month, I'm heading so as to cut across Earth's path. It'll be a shorter trip than it was getting here."

"But about the sun—" Haines begged.

"Just a moment," Carson told him. "I want to let you know that I've tried to provide for everything. There's more than a month's supply of Mercurian food packed away here for all of us. As a matter of fact, I figure it's close to a three-month's supply, for the crawlers were generous. And I've got plenty of fuel. We're all set."

He grinned at Nora.

"When we get back to Earth, we'll probably have enough fuel left over to make a trip to the Moon—although I'm doubtful whether that would appeal to you. You may have had enough of space traveling. All the same, Nora, it would be a good place for our honeymoon. That is, if it's all right with Haines."

"It's all right with me," Nora blushed furiously. "If you can make the moon stand still the way you did the sun, I might be willing to take a chance."

Haines, of course, shook his head.

"I'm against it," he declared ruefully. "But I've got nothing to say. Except maybe—well, congratulations." He gripped Carson's hand fervently. "And thanks for the lift to Earth."

Carson grinned happily.

"Maybe you'll do as much for me some day, Frank," he told the unlucky suitor. "As for that business of making the sun stand still—"

Carson explained briefly what had previously transpired.

"The ordinary atmosphere of Mercury is so thin," he went on, "that we usually consider it non-existent. That means that when the sun sinks below the horizon, we don't see it any more."

"It's simply out of our line of sight. But these masses of air, before they spread over the surface of the entire planet, were fairly dense, and had a considerable lens-like effect."

"Just as on Earth," Nora said.

"Exactly. They bent the sun's rays,

brought them down so that the rays hit your eyes again. Naturally, it seemed that the sun had leaped up over the horizon. But I can assure you that it's still in the same place."

He left off for a moment to switch close a pair of rocket tubes.

"Eventually all that air will spread over the entire planet, and then manage to get itself lost in space. Meanwhile, however, its poisonous effect has put a lot of topknotted Mercurians out of commission—the purple kind, I'm glad to say, for they were the only ones important enough to be at today's ceremony."

"That will make them more ready to listen to reason, and Dorn has promised to put into operation my plan for making part of the cold side habitable."

"Then you did think of a plan!" Haines exclaimed.

"It will work, too. Dorn is going to call the Mercurian scientists together, seize control while the few that remain of the purple race are still demoralized. I'll explain it all to you later."

NORA was silent for a space.

"Anything wrong?" Carson asked.

"I've been thinking that when we get back to Earth—"

"There'll be fuel shortage? I've been worrying about that, too. But although I haven't kept accurate count of the days that have passed, I know that we still have a few months left to work. And I've got just the thing we needed."

"Those solar rocks store the sun's energy directly," Carson explained. "They, of course, are skeletons of the crawlers. But the crawlers taught me how to do the same thing, using instead the chemical substances of which the rocks are made. We'll have plenty of energy now!"

They were drawing away from Mercury's gravitational field, their acceleration on the increase. Carson cut down slightly the blasting of the rockets.

"It's going to be a long trip back," Haines said. "What are we going to do, study astronomy again?"

"I don't think so," answered Nora, and then she began to blush again.

Carson saw an image form on the floor of the ship. Nora was thinking furiously, and unconsciously expressing her thoughts in the Mercurian manner.

Carson put his arms around her and kissed her.

"You asked for it," he told her.

"I?" exclaimed Nora indignantly. "I never did!"

He kissed her again, as they sped on toward Earth.

The green light flashed, and a large meteor disappeared. They didn't even notice it.

"And I thought this trip was supposed to be platonic!" Haines growled.

"You better teach me how to manipulate the controls," he told Carson. "You'll be much too busy!"



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The Cubic City

By LOUIS TUCKER

Even in the Mental World of Griswold Lee, Human Nature Diverged Not an iota from the Norm!



TWO miles wide, two miles long, and two miles high is eight cubic miles. Eight floors to the hundred feet, or four hundred to the mile, give three thousand two hundred square miles of floor space.

"This is as large as an ancient city forty miles long and twenty wide, covered solidly with houses four stories high; and no part of it is more than two miles from any other part."

"Obvious," I answered, "but not enthusing."

"You do not click it," shrugged my guide.

The phrase intrigued me and I stared at him. He was neatly uniformed in dark olive-drab, like a hotel bellboy; but few bellboys have such a chin and none such eyes of flashing dark intelligence.

"Try it from another slant," he said. "We have no traffic problem."

"What is your population?" I asked.

"About eighty millions."

"You are not overcrowded," I sneered. He took me seriously.

"Eight hundred floors," he said: "about a hundred thousand to a floor. That is twenty-five thousand to the square mile and forty persons to the acre. We give a thousand square feet of floor space to each. That is enough."

"Where do you get your light?"

He flung his hand upward. I thought the passage flooded with sane daylight; but now I saw that the light rose from behind a narrow cornice and was reflected from the white tiles of the ceiling to those of the floor.

"Helium tubes," he said. "Exactly the same quality and intensity as sunshine. Here is your room."

He unlocked a door and set my suitcase inside. I motioned him in after me.

"I come from far away," I said, "and am behind the times. Make sure, before you go, that I can understand your conveniences. What, for instance, is the number of my room?"

"Four hundred-one-fifty-twenty-seven," he answered, and handed me a tagged key, then translated. "Floor four hundred, south section, passage fifty, room twenty-seven."

The room was large—about twenty feet by thirty—and white. It had a low divan across one end and held two or three easy chairs and tables; but was, on the whole, sparsely furnished. The young man waved me to a chair and sat down himself.

"I see no windows. How do we get ventilation?" I asked.

"Compressed air is released near the floor. It goes out into the passageway through that ornamental steel grating over the door. In summer its expansion cools the rooms. We keep a brisk, cool, even temperature all the year round."

"Here is the electric heater if you want more warmth, the fan if you want a breeze. This is the bathroom door. Here is the light switch, here is the Graph."

"What is a Graph?"

HE looked at me intently.

"I thought it universal in the world," he said at last, "even—pardon me—on farms."

"Do I look like a farmer?"

"Not in the least!" he answered briskly. "But—but—"

EDITOR'S NOTE



Some stories are forgotten almost as soon as they are printed. Others stand the test of time.

Because "The Cubic City," by Louis Tucker, has stood this

test, it has been nominated for SCIENTIFICTION'S HALL OF FAME and is reprinted here.

In each issue we will honor one of the most outstanding fantasy classics of all time, as selected by our readers.

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I strode along the translucent passageway, flanked by Dr. Gray and Cartex

"I am an explorer," I smiled. "I have been away from your modern cities for a long time. Many things in your ultra-modern civilization puzzle me. Explain as if I were a child."

Pleased by my confidential tone, he answered.

"Press this black button, dictate against this disk, and take the printed record from this drawer. Press this white button, manipulate this dial, and speak to any person in the city; or ask for Central and get any person in the world."

"Reverse the switch and get music or lectures on the first button, or any book or play you like on the second. The rear of the disk throws the image of the person you speak to, or the moving picture of the play or book, upon that mirror."

"You spoke of a newspaper?"

"The same disk with this second switch thrown. Push button for numbered table of contents; then manipulate the dial and hear and see what news you wish."

"If it is your own, return everything to zero and try again. If it is a mechanical mistake, like leaving both switches down,

everything returns to zero automatically."

"What are the fees for this?"

"Included in the rent."

"Excellent. Where do I eat?"

"Synthetic liquid foods from the dialed ice-water faucet in the bathroom. They are made automatically, in bulk, so cheaply that there is no charge for them. Busy people live on them for weeks at a time, but they lack bulk and vitamins. Real meals are served at any restaurant along the passageway."

"Thank you," I said, "I will not keep you longer," and handed him a quarter.

He looked at it long and curiously, then spun it away, sprang to the Graph and began to dial, trembling with wrath.

"Room four hundred-one-fifty-twenty-seven," he barked. "Cartex speaking. Send police. Attempted bribery!"

I might have tried to soothe him, but he fell back into his chair unconscious. I tried to go to him but had just enough strength to stagger to a chair myself.

I roused to find two quiet strangers in the room. The one bending over Cartex remarked,

"There was a little too much gas. We'll have to wait." His voice was very calm. "What is it all about, Officer?" I asked. "What did you do?" countered my own man gently.

"Gave him a tip. We always tip the bell-boy where I live," I answered.

The two policemen eyed each other and I took a long look at them. They had the same prominent chins as Cartex and eyes of dark intelligence, and were dressed much as he was. They were, however, agreeably unexcited.

"What is a tip?" asked one.

"Money for carrying my suitcase," I explained.

"The custom still survives in Central Africa," commented the other. "Do you live there?"

"No, though I have been there. I live in New York."

Cartex' man raised his eyebrows and answered,

"This is New York."

Before I had recovered from this thunderbolt he went on.

"Uganda keeps the custom because the blacks there feel themselves inferior to the whites. Here there are no such social strata. Cartex misunderstood. The insult was too great."

"Where there is no intention to be insulting there is no insult. Cartex looks intelligent. He will forgive me. What did I do?"

"You assumed that Cartex was your social inferior."

"Isn't he?"

"Certainly not. Cartex is a dramatic student working along to a degree."

"But, even so, a coin or two from one who has a larger income—"

"Your incomes are the same. By the way, let me see your service-card. We need your name, age, place of origin and data."

"What is a service-card?"

The two men looked at each other again and there was so long a pause that, during it, Cartex woke up. He did it thoroughly and all at once, like a kitten.

"Cartex," I said, "I learn from this man that I was rude to you by offering you money for service rendered. I did not understand. I beg your pardon."

"He did not mean to bribe you," explained my man.

THERE was another pause, while Cartex visibly controlled himself and considered. At last he smiled.

"Then there was no offense," he decided. "I withdraw charges."

"Excellent," said my man. "Come tell the judge. The stranger has no service-card. Where did you find him?"

"Walking along this passage with his key in one hand and a suitcase in the other. He asked the way to his room."

"Where is the suitcase?" snapped the other man.

They searched the whole apartment but

could not find it.

"What did you do with it?" my man demanded at last.

"Nothing," I answered. "Cartex set it just inside the door. I have not seen it since."

Ruffled by this, they took me along a hundred yards of passageway and entered an elevator in silence.

"How do you manage an elevator shaft two miles high?" I asked Cartex.

"We don't," he said. "We break the trip every few dozen stories."

"And ease the pressure on your water pipes by tanks every few stories also, I suppose?" I continued.

"Of course," agreed Cartex.

The court had Graphs and dictaphones enough and very few spectators, but otherwise it was much like my idea of such places formed from the illustrated papers. The judge was a quiet, thin, clean-shaven, courteous man in a black gown, more like a high-grade surgeon than a judge.

He ordered me seated in a very comfortable metal chair, upon a rubber mat under a very powerful arc light, then flashed blue lightning at me from under his white eyebrows and asked why I was there.

"I understand," I said, "that there is some informality about what the quiet gentlemen with the heavy shoes call a 'service-card.' My young friend Cartex also preferred a charge of bribery against me, but courteously withdrew it on learning that I had no such design."

"Explain," said the judge to Cartex. Cartex did so.

"What is your name?" the judge then asked me.

"Griswold Lee," I answered.

"Where were you born?"

"Baton Rouge, Louisiana, January second, eighteen ninety-five."

The keen, thin, tired face of the judge suddenly changed. His interest in me had been professional. Now it was personal and vivid.

"Where do you live?"

"Brooklyn," I said, and gave him my address on Remsen Street.

"What is your occupation?"

"First, soldier in the First World War; then, after the war, explorer and free-lance imaginative writer. The world would not believe my discoveries in Tibet when I presented them as facts, so I was compelled to dress them up and sell them as fiction."

"How did you get here?"

"I do not know, Judge. Twenty minutes ago I was sitting at my desk in Brooklyn, writing an article. Suddenly, I found myself walking down a passageway in this hotel, with a tagged room-key in one hand and my suitcase in the other. I looked around for the bellboy who should be with me, but found no one. Then I met Cartex."

"What was the subject of the article?"

"The probable development of the ultra-modern city."

The judge looked at me too intently for comfort. Then he asked a quiet man in

one-piece tan overalls, who was sitting at a keyboard watching a plotted curve.

"Inspector, can you detect a hiatus?"

The man looked up and shook his head. He had so keen and kind a face that I liked him.

"There is no hiatus," he answered.

"When an impossible statement is made under the Veriscope," the judge explained, speaking with clear-cut precision, "only one course is open to the court—to detain the subject for observation by competent alienists. Mr. Lee's delusion that he is in a twentieth-century hotel is clear.

"Mr. Lee, permit me to compliment your self-control. You have passed through some unknown experience so drastic that it has not only deprived you of your service-card, but has obliterated from your mind all memory of itself and of your personal identity; and still you retain mental poise and balance.

"It gives me great regret that I have no choice except to commit you to a psychopathic hospital for observation, upon the charge of Inurbanity. I am required by statute to ask if you have any requests to make before this is done."

"It would be a great pleasure to see your city, Judge," I said. "And Cartex—who, I understand, is a dramatic student working through college as a bellboy—was kind enough to overlook my involuntary rudeness and withdraw charges, thus making himself my friend. If Cartex might be assigned to guide me—"

CARTEX rose to object, but the judge spoke first.

"There is no hiatus," he said. "Mr. Lee accurately states both his opinion and his wishes. It might be of assistance to a diagnosis to act upon them. Has Doctor Gray arrived?"

"Here, sir," nervously answered someone from the door.

"Mr. Lee," went on the judge, "Cartex and Dr. Gray have long been friends. They will act as your escort. The suspected defect, Doctor, is Inurbanity. You may familiarize yourself with the details of the case from the newspapers. Verdict suspended and subject remanded to the care of Cartex and Dr. Gray. Next case."

Dr. Gray came over and spoke to me. He was dressed much like Cartex—a keen, pleasant, dapper little man, middle-aged, with a brown beard and brown hair and eyes. He clipped his words as if in a hurry. When Cartex joined us the doctor led us out into the passage.

"There is so much we need to tell each other," he began, "that we had better go where we can talk. Where shall that be?"

"The sunparlor is not crowded at this hour," suggested Cartex.

In a cubic city, nothing is more than two miles from anything else. The average distance is about half a mile. The doctor was of a methodical as well as a nervous turn of mind, for as we strolled along he laid down lines along which we were to

talk.

I did not fully follow him, because a woman and two children in rose-silk knitted bathing suits and slippers came out of an apartment and sauntered along the passageway in front of us. They made a charming little group, not out of place on any sea beach, but singular indoors.

Then, suddenly, my breath was taken away; for the passage debouched on a great esplanade forty feet wide and two miles long, roofed, floored and walled with glass. Roof and floor were translucent, so that we could see other levels under and above us. At first this made me dizzy, but one soon grew used to it.

We had come out about halfway up the wall, facing southwest, so that we were a mile high and the view was magnificent. We looked across the North River and New Jersey exactly as one might from an airplane. I had been up in an airplane over New York more than once, so that I recognized the terrain.

BUT I recognized nothing else. We were above the southern end of Central Park, but New York City was gone. Manhattan Island was a well-kept meadow, grassed, treed and parked.

"You seem to have received another shock," said Dr. Gray. "Sit down."

Recalled to myself I looked around. The inner half of the glass floor rose a trifle and was filled with steamer chairs; and in these chairs, basking in the spring sunshine, lay quite a number of people in bathing suits, while others strolled along the pathway.

"Sunbathers," said the doctor. "The glass is quartz glass and lets in the actinic rays. Everyone who can get the time takes a sunbath every day. All doctors prescribe it."

"The place does not seem crowded," I remarked.

"The population of this floor is a hundred thousand. It has eight miles of glass promenade, all exposed to the sun's rays every day. It could accommodate a hundred thousand reclining chairs; but we find two rows of twenty thousand each enough except on Sundays. The sunbathers on week days are mostly women and children."

"Cartex told me you had a thousand square feet of floor space to each citizen. Do you not waste too much of it on these sunbaths?"

"About sixteen square feet each. If it took more it would be worth it; but Cartex referred to space inside the building. These galleries are extra. Our board of health finds them indispensable. Not only do they cure disease, but they form the best possible way to detect it.

"People in bathing suits cannot conceal much about physical condition from a keen-eyed doctor. We catch and cure most things before they are well started."

"But are not the suits a little—er—extreme?" I asked, watching a couple of sixteen-year-old girls stroll by.

"We have some regulations," shrugged the doctor. "But as a general thing, our policy is to let all do what they like, so long as they do not interfere with other people. If those girls were ugly, the Art Department would drop them a hint. If they seemed likely to become improper, they would be regulated instantly by Child Welfare."

"If they appeared unhealthy, the Health Department would put them through a clinic. But as it is, if they like to expose a few more square inches of young complexion than do most, nobody cares. I daresay Cartex' bathing suit is scantier."

"Hush, Doctor," warned Cartex, laying a finger on his own lips, "or read the papers."

"So far as I can understand my case, Dr. Gray," I said, "you are to examine me for insanity or 'Inurbanity,' whatever that is; and through the courtesy of the judge, you are showing me the city and observing my reactions as the easiest way to make a diagnosis. Is there nothing I can do to assist you to a belief that I am sane?"

"Tell me just how you got here," answered the doctor. "Which, I already know from the judge, you cannot do."

"I can come pretty near it," I answered. "Although, of course, only by inference, since I remember nothing. Doctor, have you ever summoned up pictures in your mind?"

"No man discovers anything without doing so."

"Dr. Gray," put in Cartex, "is one of our foremost mind specialists and has even made an improvement in the Veriscope itself. Although ill from overwork, he has assumed the duties of an assistant intern because of the great singularity and interest attaching to your case, Mr. Lee."

"Then," I said, "if he can grasp my old-fashioned technical phrases, he may perhaps help me. It had been my habit, Doctor, to picture mentally the scene I was describing. When I made a forecast, I concentrated until I saw it."

"This power has grown with practice, until quite recently it has become independently pictorial. I mean that in imagining a scene, I do not have consciously to create the details. They fill themselves in; often quite accurately."

"For instance, in a recent dispute as to the presence of a large stone in a salmon pool which I had never seen, I closed my eyes, willed to see the stream from above, picked out the pool, mentally descended to the bank, looked and found the stone there—also a blasted pine which nobody had mentioned but which both my companions recalled when reminded."

I PAUSED for emphasis.

"The sensation was exactly that of visiting the place and the results were about the same. My explanation to my challengers was that I read telepathically the picture in their minds. The thing is not clairvoyance because I do not go into a trance. However, I have been greatly

puzzled lately by unexplained small objects in my room."

"In one of these scenes, I chose to imagine to myself that I picked a violet; and later I found a newly plucked wild violet in my fingers. I laid it on my desk and turned away. When I looked back, it was gone. Amused by this, I imagined treasure scenes in the past in which I helped myself to gold and jewels."

"I brought them back with me and watched them fade, after an hour or so. I could see no gain in telling another observer. Auto-hypnosis, vivid as mine, would necessarily be telepathic. Whether what I saw was there or not, the other observer would see it too: and the practical dangers were great."

"Today I photographed several objects just brought back, sent the film to be developed, then settled down to finish a promised article on the probable development of cities in the near future. I was intent on the most interesting part when I looked up and found myself here."

"The suitcase which you handed me was real," put in Cartex, "real, heavy and utterly ancient. Did nothing which you brought back stay?"

I jammed my hands into my pockets and produced the usual things—notebook, billfold, penknife, cigarette lighter, and silver and even copper change. Cartex went into ecstasies over each article and pronounced them all genuine antiques of the twentieth century. Among the pennies was a gold Turkish coin, apparently very ancient.

"Where did you get that?" asked Cartex. "I did not know that it was still there. I see no reason at all for you to believe me, but I picked that coin in imagination out of the treasure chest of an Elizabethan buccaneer. I thought it had vanished like the others."

"We believe you perfectly, Mr. Lee," broke in the doctor. "We have no doubt at all of your sincerity. We have seen you under the Veriscope. Of course, we do not for a moment dream that your perfectly sincere account of yourself is correct; but we are searching together with you for the facts."

"Perhaps," I said, "it will help if you tell me how this great change in city-building came about. At least, it will assuage my curiosity."

"The financial life of a skyscraper was about twenty years," answered the doctor, "although the mere physical life ought to be centuries. They altered quickly. They were made larger and still larger. Invention of the helium lamp, giving real daylight, removed the need for windows."

"The drift of population to the cities became an avalanche. Problems immense and sinister, such as the world had never seen before, arose and were grappled with one by one and solved, all but the problem of lateral urban transportation. How many street levels in nineteen-thirty?"

"Two," answered Cartex for me. "The

reference book entitled 'Wilson on Transportation' says that bridged street crossings for pedestrians did not come into general use until nineteen thirty-five, and then on main streets only. Sidewalks between crossing were not raised until some years later."

"Whatever the dates of separate improvements," shrugged Dr. Gray, "they came too late. The growing population overtook them all and clogged them. Yet inside the great buildings which continued to grow larger, there was no congestion, because there was no need of lateral transportation."

"Everything on any one floor was within easy walk of everything else. Men took an elevator to whatever floor they wanted, then walked to their destinations. Therefore each building tended to be more complete in itself, containing everything but sleeping quarters."

"At last it became economical to add a floor or two and give janitors, shopgirls, elevator boys, repairmen and such persons dormitories in the building. The custom grew until half the city was housed in the same buildings in which it worked; but since, by that time, the population had more than doubled, this did not ease congestion in the streets."

"Some help was gained by throwing bridges from building to building; but these became congested too. Bridges were thrown then from every floor of every building, and so the cubic city was evolved. The rest was detail."

"What limits the size of your cube to two miles?" I asked.

"Air pressure. We find a difference in vertical height of two miles about all anyone can stand. Approximately the same limit is placed by horizontal distance. A mile and back is about as far as it is practical to walk."

THIS was certainly a fantastic world.

"How many cubic cities have you?"

"Fifty-three in the United States; about three hundred in the world. New York is the second largest."

"What is the largest? London?"

"Jerusalem. It is the nearest to the center of land surface of the globe. When the Suez Canal became congested past enlargement, we blasted channels to the Mediterranean and Red Seas, made Jordan Valley a salt-water inland lake and the safest harbor on the globe, and internationalized Palestine. The consequent growth in population made a vast cubic city necessary."

"Internationalized?"

"Certainly. The world is governed by a League of Cities."

"What is the population of the globe?"

"About three billion. Since we discovered how to extract synthetic foods from plants, we could support a trillion; but we judged it best to limit our numbers and improve our quality. We can cure

all diseases except some forms of cancer, but we can not remove inherited stupidity."

"Cure all diseases? What is your average life, then?"

"About a hundred and fifty years."

"What is your average index of intelligence?"

"For the normal population, Theta. For all, including the subnormals, Zeta. For New York City, Kappa."

"I do not understand your table of ratings."

"We divide the mental distance between the greatest genius, and the stupidest person who we are quite sure is sane, into twenty-five parts. The average man in the whole world is one third of the way up. Cartex rates Sigma."

Sure enough, there was a little badge on Cartex' lapel which I had mistaken, at first, for a bellboy's button, then for a Greek fraternity pin.

"Dr. Gray rates Tau," smiled Cartex bowing, "or did, before his illness. He may do better now."

"And how would you rate me, Doctor?" I asked.

"Above myself, except for your delusion," answered Dr. Gray politely. "As it is, I am afraid that you must be classified as subnormal."

Cartex gasped.

"Oh, no," he said, "not that, Doctor! On a side classification, perhaps. Abnormal, perhaps. But not subnormal! I never saw a case further from Inurbanity."

"Still, what can one do where there is obsession?" shrugged the doctor.

"Isolate it," insisted Cartex. "First isolate it, then cure it."

He turned to me.

"Admitting, for the moment, Griswold Lee, that your belief is right and that you have come here from two centuries ago by unknown subjective methods, how does the situation strike you? You are here now. The fact of your arrival is so plain that the method of it is comparatively unimportant."

"Is it not clear what your decision must be? Is not your proper course to apply for a service-card, take up the work for which you are most fitted and become a useful and loyal citizen—dropping into the background, even in your own mind, the unsolved mystery of how you came?"

"To learn and labor truly to get mine own living, and to do my duty in that station of life to which it has pleased God to call me?" I misquoted, smiling. "You are right. Of course it is."

"There, Doctor," said Cartex triumphantly. "When an obsession can be so easily isolated mentally as that, it is no longer dangerous."

"You seem intensely interested in this stranger," objected Dr. Gray.

"I am, Doctor," nodded Cartex, "though not as you imply. He named me as his friend in open court, not knowing. I have

had admiration all my life from other men and sometimes even affection, but never honest friendship. It has grown mutual."

"I think the gentlemen has two obsessions."

"Think it in silence, then," shrugged Cartex, "or I shall be your enemy for life."

DR. GRAY smiled sadiy.

"What," he asked, "is a poor official to do? On the one hand I must brave your displeasure; or, on the other, I must release upon society a man who really, on two counts, is not urbane."

"What is this 'Inurbanity?'" I asked.

"When people crowded together in cubic cities," answered Dr. Gray, "we found that it was possible to commit a great many offenses for which there was no law. We therefore made laws against such things as hawking and spitting, giggling, loud laughter, talking in raucous voices, bad temper and a thousand other like matters. These laws could not be enforced. Any good lawyer could clear his client; for they are all matters of degree, dependent upon manner, time and place."

"Yet anyone who did not choose to keep them could make all comfort quite impossible for hundreds 'round him. A few such men and women, comparatively a few, could have destroyed our rising new civilization. Therefore, we lumped these things under the head of 'Inurbanity'!"

"People with 'Ists' and 'Isms,' criminals, people mentally ill without being quite insane, people incurably boorish and stupid, people with complexes and phobias, people deformed, all people, in short, who bother others too much and will not or cannot change, are classed as 'Inurbane.'"

"In a safe, simple, painless way they are made incapable of bearing children and are confined for life in humane institutions outside the city. Most of the institutions are almost empty. We have no longer any criminal classes. We have no insane, no idiots, no crippled or deformed, no one with inheritable diseases, no drunkards nor drug addicts and very few extremists of any kind."

"Also no rebels, I suppose," I said, "and no reformers."

"Plenty of both," bowed the doctor. "Cartex here is a great rebel against dramatic conventions, and every new scientific discovery means drastic reforms; but every rebellion and reform must be courteous and urbane."

"How, then, shall I become urbane?" I asked.

"Personal consultations should be private," remarked the doctor, and reaching over me he raised a lever in a little machine upon a stand beside me; which machine I had mistaken for a radio.

"Quite the most urbane thing you have done yet," he went on, "is to give me a good excuse for shutting off the news-service."

"News-service?" I asked.

"Did you not know that there were several million people watching and listening to us?" flashed Cartex. "The doctor and I are made for life professionally by the publicity of our association with you. We have become world famous. Your coming is world news—"

"I am made for life emotionally also," beamed Dr. Gray. "The lady whom I love must marry me or—"

"Indeed she won't," said Cartex indignantly. "She marries for love only. Doctor, you are inurbane."

The doctor started to his feet so angrily that I thought it best to take command.

"Doctor, sit down," I suggested. "Even in my poor day anger was inurbane. Cartex, a bellboy, even a student bellboy, should not speak so to an eminent physician. What is the secret you two are discussing over my head?"

Under cover of gesturing with my handkerchief I turned the machine lever back on.

"I said there were two inhibitions," sneered the doctor.

"Nonsense," returned Cartex. "It is the most natural thing in the world. He has not seen another of our women except in a sunbath suit. You shall not hurt him. No woman now living had ever received or been in a position to receive so great a compliment—honest, sincere, non-sentimental friendship from a real fighting man. Don't spoil the situation."

"Cartex, you little devil," I broke in. "You look like a boy, talk like a boy, act like one—but are you a boy?"

"What do you think?" Cartex teased, facing me.

"Take off your coat," I said.

HE did so, and stood in his trousers and a silk shirt.

"Must I take off my shirt, Master?" he asked. "I have a sunbath suit under it."

"Which would you rather do, take it off, or come here and let me put my arm about you?"

"Both," decided Cartex.

"Cartex!" protested Dr. Gray too loudly for politeness. "Don't be dramatic."

"Who should if I am not?" flashed Cartex from the hollow of my arm. "You know I can do anything in reason and be forgiven."

"Griswold Lee," said the doctor, visibly controlling himself, "Cartex is one of our best comedy actresses, a darling of the metropolitan stage. She can care nothing for you. She has not known you long enough. She must be trying to attract you to her to share in your enormous publicity."

"But she has gone too far. She jeopardizes her position. Restrain her. She must be acting; but, to those who love her, such action is not comedy. Cartex, unless you marry me I must report this man inurbane. Lee, in that far land you think you came from, were you married?"

"No, Doctor. When I came back from

the war, the girl I was engaged to had married someone else. Since then I have been girl-shy."

"Girl-shy? Great grief!"

"There's such a thing as love at first sight, Doctor. I don't know whether Cartex feels it yet, but I do."

"You darling!" gasped Cartex, turning around in my arms and kissing me.

"You light-o'-love!" snarled the doctor—only he paraphrased it. Then he struck at her.

There seemed only one thing to do, so I did it. The doctor disappeared under a chair, drummed with his feet a little and lay still; and sunbath-suited women from a hundred lounges jumped up and screamed.

"Run for it! Run!" gasped Cartex.

"Where?" I asked.

"This way! My rooms!"

The way seemed to be along a passageway, just around a corner and down an elevator. Cartex employed the moment's pause, while waiting for the elevator, to step into the car dressed just like any other woman who had, been sunbathing, except that she was barefoot. The elevator girl recognized both of us, but did not know anything had happened. Cartex led me to a door, unlocked it and shut us both in.

"Now," she said, "tell me that you love me."

I had but well begun when the Graph buzzed. Cartex wiggled out of my arms and ran to it.

"Interurban News speaking," it said. "Is this Miss Cartex? Confused reports have come to us that you have been abducted by a maniac."

"Is that you, Jimmy? I thought I knew the voice. Turn on your television. I have not been abducted. I am in my rooms, just back from sunbathing. Mr. Lee is not a maniac, but the wisest man I ever met. He fell in love with me at first sight. He is with me now. I fell in love with him. Jimmy, we want to get married. Help us!"

"Have you no mercy, Cartex?"

"You never really loved me, you know, Jimmy. You love news better. Get me a license and a minister and I will—I will energize my mirror and you may have the pictures. Think of the scoop!"

The Graph blurred for a moment, then came clear.

"They tried to cut us off. What did you do to Dr. Gray?"

"I cannot prove it, Jimmy—the Visional was off—but the poor man was ill. He had a nerve-crash and tried to blackmail me into marriage, by threatening to declare Griswold Lee inurbane. Then he called me an insulting name, struck me. Griswold hit him on the point of the chin, and he was still insensible when we left."

Cartex came back into my arms, but this time she did it slowly, gradually, superbly.

"A million people are watching us," she said, "and thousands yet unborn will listen

to what we say."

"Are you as important as all that?" I asked.

"No; but you are. We live so safely in these modern cities that nothing as exciting as this has happened in a decade anywhere. The world and I know that you have come back from two centuries ago, whether the city fathers believe it or not."

SHE pressed a button, ran a finger down a list, dialed the Graph a moment and a quiet voice filled the room.

"Latest developments in the Griswold case. The two most instantaneous lovers in the world take refuge in Miss Cartex's apartment. Miss Cartex bargains for a marriage license and, with her usual modesty and good sense, turns on the Visional. Surgeons say Dr. Gray will recover. Griswold Lee, the only professional soldier now in the world, does not understand the publicity accorded him. See our illustrated section!"

"You see, the whole world is our chap-erone," remarked Cartex and leaned out of my arms to turn off the Graph.

There came a whir in the wall and a panel fell open. She took out a pneumatic container, opened it and displayed a marriage license. The Graph whirled again.

"The Rev. Dr. Worden of St. James' consents to perform your marriage ceremony. Hurry, before Dr. Gray interferes."

"All ready, Jimmy," answered Cartex. "Go."

There came a sound of distant organ music. It ceased; and the mirror at the side of the room was filled with the image of a robed clergyman who married us, his deep voice coming out of the Graph instead of from his moving lips. Neither of us wore a ring, so Cartex fetched one from her bedroom. The ceremony over, the clergyman disappeared and the Graph whirled.

"Dr. Gray has recovered and sworn out a warrant against Griswold Lee for attempted murder. Accept congratulations on your marriage. Keep your door barred, cut off your ventilation and have your husband instantly dictate to us a twenty-minute account of Brooklyn and New York in nineteen-thirty, distinguishing carefully between what he has heard or read and what he knows of his own knowledge to be correct.

"If he gives detail enough, we can verify from antiquarian records, prove his claims and save you. Otherwise you will probably both be convicted of Inurbanity and attempted murder."

"Jimmy, that's brains!" cheered Cartex. "Two breaths ago I did not see any way out except to spend a honeymoon besieged here and ending in death. Now you have saved us. Dictate, Griswold!"

"I don't know how to use the Graph."

"Then I will relay it. Hurry. Begin!"

The doorbell buzzed.

"New York," I said, "in my day was immune to noises. Upon the street we could often hear each other speak, but in the subways we could not hear ourselves think. We grew so used to this, few noticed it."

There came a heavy knocking on the door. Cartex bolted it, barred it, jammed the overturned kitchen table slantwise under the lock, and made a notch in the floor to hold its lower end by ripping up tiles.

"In nineteen-thirty Castle Garden still contained fishes," I went on. "The Metropolitan Museum in the last twenty years had sprouted more wings than a cherub. We had learned how to fly. The 'interferometer' had taught us to tell the size of stars, both on and off the stage. The word 'camouflage' had not yet come of age.

"The first tunnel under the North River had just been finished, the first bridge just begun. Drinking was in a state of arrested development. Bootleggers had no souls but only spirits. Women had dropped their superstitions and ceased to dress for the Unseen.

"Entering uninvited anywhere was impolite and was spoken of as 'crashing.' Somebody in the passage is trying to crash our metal door now, with a beam.

"Cartex, since the ill-mannered persons outside are so afraid of gas, would not a bottle of bath ammonia poured on the rug over our ventilator, together with some strips of silk and cotton burned in a dish beneath it, send them away?"

"Try it!" called Cartex and the Graph together.

She ran into her little kitchenette to get the dish, and screamed. I dashed in after her, only to plunge into the arms of a small wiry policeman. I smashed him back against another. The third, his arms around Cartex, was Dr. Gray.

If the dumbwaiter had been larger, I really do not know what would have happened. I suppose they sent up little men

because big ones would have stuck in it. Even as it was, the fight was desperate. I settled Dr. Gray in the first second. He could not guard himself because his hands were full of Cartex.

Then Cartex kept out of the way; but whenever I was hard pressed, she ran in and hit one of the policemen on the head with a chair leg from behind. When they were both unconscious, we tied them up and sent all three down the shaft in the dumbwaiter, one at a time; then jammed the waiter crossways, cut the wires and stuffed blankets on top of it.

BY this time, someone had a blowtorch against our front door, cutting through the metal. We set some more rags of cloth on fire and ran, but returned.

I started a description of my own Brooklyn room. As I looked around at Cartex' luxurious nest, it was easy to recall and describe my own bachelor discomforts. For several reasons I kept Cartex in my arms. The Graph before me blurred, then cleared again as the door broke in. I tightened my arms around my wife and went on visualizing my own room. Then slowly I found myself sitting at my desk in Brooklyn, with my landlady clinging to me . . .

It would make another story as long as this to tell how I made the dear lady all the necessary explanations, going into details scrupulously. So she decided that she had better marry me.

We have gone out to live in the country. She is as happy as the day is long, except for one small inurbanity—a quite unnecessary one, for I have now fallen out of touch with the gentlemen in Tibet, under whose auspices I once studied.

They do not approve of matrimony. Yet, even now, she will not permit me to write a story unless she is allowed to act as my amanuensis.

NEXT ISSUE'S HALL OF FAME SELECTION

THE ANCIENT BRAIN

*A Story of a Man of Today Pitted
Against the Men of Tomorrow*

BY
A. G. STANGLAND

ONE OF SCIENTIFICTION'S OUTSTANDING CLASSICS!



Graham raised the rifle and fired point-blank at the awful creature's left eye



Meteorite Enigma

By OWEN FOX JEROME

*When that Dragon-Shaped Gem Was Locked into
the Meteorite a Blinding Flash Plunged Bob
Graham and His Friends into Infinite Space!*

AFTER weeks of heart-breaking travel through the wild interior of Argentina, Bob Graham led his almost exhausted party up to the desolate little plateau. It was here that Dr. Albert Trommer had claimed to have found his amazing meteorite about a year ago.

Only by dint of his expert woodcraft and his knowledge of the South American country had Graham been able to find the site at all. This was not cattle country, being mountainous and semi-arid.

Nobody knew anything about a meteorite, and the native Indians were

singularly unhelpful. Without the crude map Dr. Trommer had made, even Bob Graham would never have found the spot.

"That's it!" cried the girl, Miriam Trommer, as the party breasted the last rise and paused to look down into the clearing.

She bit her nether lip at sight of the ruined and rusty bits of paraphernalia and scientific equipment strewn about.

A year of wind and weather and sun, not to mention wild life, had pretty thoroughly wiped out her late father's camp.

"Steady, Miriam," cautioned Professor Warren Locke, the head of this expedition, as his keen gray eyes swiftly surveyed the scene before him.

"I see the meteorite itself—yonder, in that declivity!" shouted Ashley. "It's just as your father described it, Miriam. I'll go have a look."

"Wait!" Professor Locke's voice cracked out. "Not a soul is to go near that rock until I have made certain tests with my special spinthariscopes. Graham, will you please see about setting up camp while I make preliminary checks!"

Graham nodded, smiling slightly when he saw Ashley wilt like a scolded puppy.

George Ashley, athletic and wealthy fiancé of Miriam Trommer, had financed this expedition into the heart of the wildest region of Argentina solely because he loved the girl. Only Professor Locke had any genuine scientific interest in the matter.

Certainly Graham did not. He hadn't wanted to accept the job as expedition guide and camp boss in the first place. But that had been before he saw the ruby and heard Warren Locke's and Miriam Trommer's incredible story. Now, he was here mainly out of curiosity. . . .

IT HAD been in Buenos Aires a month previous that a mutual friend had introduced the three new arrivals from the States to him.

"You may have heard of Miriam Trommer's father, Dr. Albert Trommer," said Locke to Graham, as he opened a small metal casket on the table before him.

The four fellow North Americans were meeting in Locke's hotel suite.

Graham shook his head.

"Well, to be as brief as possible," explained Professor Locke, "Dr. Trommer was a paleontologist. He was in the interior of Argentina about a year ago when he saw a meteor fall nearby. Although not a meteorologist, being almost on the spot, he headed for the site, found the meteorite and opened it."

"Opened it?" repeated Graham, puzzled.

"Yes. But first let me show you this thing that Miriam calls a 'ruby' and then I'll tell you the story."

The last bit of fluffy wrapping fell away from the object Professor Locke had taken from the casket, revealing a blood-red, glittering trinket about the size of a demi-tasse cup.

It was semi-transparent and did look amazingly like a monstrous ruby. But what a ruby! It was obviously an exquisitely carved gem, a perfect replica of a weird creature similar to the Chinese dragon without wings.

The nearest thing Graham could think of to compare it to was the giant lizard of Komodo Island.

It crouched firmly on its base of four bunched and taloned feet, its tail curled around it. A row of spiny teeth ran from the middle of its head down along its back and halfway down the tail, each bit of the serration perfectly cut.

The mouth was open in a slight snarl, showing a vicious double row of tiny yellowish-white fangs. For eyes the thing had a pair of perfectly matched emeralds which somehow were flawed or cut to give the queer illusion of elongated pupils remarkably like the eyes of a cat.

The thing was so perfect that it did not seem to be a carved and polished stone; it seemed more like an actual miniature dragon which had magically been turned into stone.

Graham picked the object up hesitantly, experiencing the queer feeling that the tiny dragon might suddenly move and bite him. It was heavy, like agate.

"It affects everybody that way," explained Locke. "Although I have tested it exhaustively in my laboratory,

I could find no trace of any radiation or emanation. It is utterly inert. It is not a genuine ruby. Neither is it plastic or glass, although it seems to be of a siliciferous nature."

"It gives me the creeps," said Miriam Trommer, shuddering.

"It is a marvelous piece of workmanship," added Ashley.

CAREFULLY replacing the red dragon on the table, Graham let his intent glance rest upon Locke's face.

"What's the story?" he asked.

"That's the most unbelievable part of it," admitted Professor Locke gravely. "Briefly, Dr. Trommer found the meteorite in a charred clearing. He described it all graphically to me before his death immediately following his return to the United States. The meteor was still hot, but, being small, had already cooled sufficiently to permit approach.

"To Dr. Trommer's surprise, it was almost spherical in shape—about the size of a hogshead. He spent some time examining the thing, noting that it was not badly pitted by its flight through space and through Earth's atmosphere.

"Then he discovered a hair-line seam which bisected the meteor in a perfect circle. The final result was that he rigged up some of the equipment he had, anchored the base of the meteorite, and succeeded in unscrewing and removing the top half.

"Yes, amazing as it seems, the meteorite was threaded, and the two halves fitted together with the precision of machined parts."

"Then it was a metal projectile of some kind?" asked Graham.

"Not according to Trommer. He insisted that it was meteoric ore of an unidentifiable formation. But the point is that he found the upper half of the thing to be a thick but hollow shell. The lower section seemed to be a solid half-sphere.

"In the center of that sphere, mounted firmly in a setting of lavalike rock and surrounded by a ring of small holes in the heart of the half-sphere, he found this red dragon!"

"You mean that?" exclaimed Graham

in shocked surprise.

"That is precisely what Dr. Trommer swore to me," insisted Professor Locke solemnly. "Now comes the strangest part of it all. His native assistants were overcome with awe and begged him to leave things be and retreat from there. However, Trommer was an investigatory scientist before all else.

"After some study, he reached over and attempted to remove this queer jewel from its setting. He braced himself and gave an experimental tug and then a twist—not severe enough to risk breaking the jewel, understand.

"On his second try, the thing swiveled to the right, as the shell had unscrewed, and came free in his hand. He fell back a step, off balance. At the same instant a flash of blinding radiance seemed to blast forth from the surrounding circle of little holes.

"It was like a battery of searchlights without heat, and the brilliance was focused on the spot from which he had just lifted the little dragon. There was a terrible flash of unknown energy, just as he imagined a person in the electric chair might feel, then he lost consciousness.

"When he regained his senses night had fallen and his men had fled. He was alone in the charred clearing, lying on his face a few feet from the two halves of the meteor. In his hand he still clutched this dragon. Only it was incredibly heavy and was a complete fistful."

DR. LOCKE hesitated a moment, then resumed with an awed, deeper note in his resonant voice.

"Everything around Trommer seemed strange, weird, out of proportion. A pickax beside him looked like a giant's tool. Estimating his length beside that implement, he made the awful discovery that he was only two feet tall!

"He must have fainted, because when he became aware of his surroundings again the sun was shining and everything had become nearly normal. I say 'nearly' advisedly.

"Being alone in the wilderness, shaken by his experience, Trommer had enough presence of mind to make

a careful map of the location. Then he pocketed this weird stone, made up a pack of provisions and supplies he could carry, and set out to find his way back to civilization.

"He returned safely to America where he showed me this dragon and told me the story."

"And you believed it?" demanded Graham, striving to keep the skepticism from his voice.

"He had irrefutable proof, to a certain extent," Locke stated soberly.

"How do you mean—aside from this queerly carved stone?"

"When Dr. Trommer came here to Argentina he stood a full six feet tall in his stockinged feet. When he was buried his height was exactly five feet, seven inches. He had lost a good five inches in stature!"

In the silence that fell Graham looked around at the others for indication that Professor Locke was pulling his leg. There was none.

"What caused Dr. Trommer's death?" he asked.

"Apparently a heart attack which may have been brought on by his hardships. But my scientific interest was aroused, and when Miriam and George came to me, we decided to investigate.

"Because of my experimental work with rays and radiations, I am particularly interested in following this remarkable business through. But we will need an experienced guide and leader of the exploring party. That is why we have come to you."

Graham took another look at the little red dragon. At least this was real and tangible enough. He drew a deep breath.

"Let's see the map," he said. . . .

And so—here they were.

In the course of nearly a year nature had obliterated most of the damage caused by the striking meteor.

Save for the shallow crater in which the missile itself lay, there was no indication of the presence of a celestial visitor. The vegetation had reclaimed the charred soil of the clearing.

Leaving the professor and Ashley to break open and set up their innumerable boxes and cases of scientific instruments, Graham set about estab-

lishing a comfortable camp.

Because of the natural dangers of the country, he had picked a tough and sturdy crew of porters he could trust. He had advised the others to outfit themselves with suitable weapons. But only Ashley had taken the hint to the extent of taking a short cavalry saber in addition to his revolver.

Locke and the girl depended on Graham and the Indians with a serenity that was quite exasperating.

HAVING had plenty of experience with wild life of South America, Graham had acquired an effective armament of his own. He always carried a special light rifle into the hinterland with him.

This was a small .22-caliber gun with the bolt action in the butt. But it was an unusual weapon in other respects.

It fired a pellet which weighed only a tenth of an ounce, but instead of the ordinary charge of about three grains of powder, it used a magnum shell containing a full seventy grains of powder. Were it not for the special shape and construction of this shell, the gun would have been blown to pieces at the firing of the first shot.

As it was, the recoil was equivalent to only a light tap on the shoulder, and the copper-jacketed bullet left the muzzle at a velocity of better than a mile a second, or twice that of the best army rifle bullet.

The gun's trajectory was almost flat, having a drop of only four inches at four hundred yards. Its fire power was devastating, causing instant death to any living thing no matter how slight the wound, killing by what was known as hydrostatic shock.

This was a condition in which the sudden and tremendous pressure to which a living target was subjected, even though the skin were scarcely creased, disorganized nerve centers all over the body and caused immediate death. Graham was rather afraid of the weapon himself.

It was still early afternoon and the camp was already orderly when Graham stepped out of his tent with the stubby little rifle cradled in his arms.

He saw Locke, Ashley and the girl clustered about some sort of a machine

the physicist had set up halfway down the slope to the ball-shaped meteorite. Ashley was jotting down notations that the older man was reading to him.

Graham, admittedly curious about the queer missile from space, strolled over to tell Locke that he was going out across the plain toward the nearest mountain in search of fresh meat for the party.

"An excellent idea," approved Professor Locke, nodding. "Got that last reading, Ashley? Oh, by the way, Graham, we've just finished the first check on the meteorite and can find no indication of vibrations or emanations of any sort. We're going on down now for a first close-up inspection. Want to look at the thing before you leave?"

"Well, yes," admitted Graham.

"Come along," invited Locke. "This may all seem rather silly to you, but in the presence of the unknown one should always act cautiously. In view of what Trommer told me about that blinding light and circle of rays, and what happened to him, I frankly expected to find at least some radioactive substance in the meteorite."

"You have found nothing at all?"

"Not a quiver of a needle," admitted the physicist. "Of course, I have just begun my various tests, but I expected more than this. No doubt, the fact that it has been exposed to the elements for about a year has dissipated any bizarre form of energy the rock possessed originally. Particularly if it was a kind of energy installed by an intelligent entity."

"You still hold to the theory that there was intelligent purpose behind this, then?"

"Undoubtedly. Can you explain the presence of the miniature dragon in the meteorite by any other means?"

"No," admitted Graham truthfully. "But it isn't proven yet that the ruby came from the meteorite."

"That's what we are going to verify now," said Ashley. "Come along if you want to see."

THE four of them made their way to the bottom of the shallow crater.

"Look!" Miriam Trommer was the first to exclaim, pointing to the edge of the half-globe. "The grooves of

threading! Where Father unscrewed the top-shell."

All four bent close to see. Graham had to admit that the girl was right. The black igneous or obsidian rock had a band of spiral grooving about a foot wide. Graham counted seven lines of threading.

"The depression in the center!" exclaimed Ashley. "The spot where the dragon was mounted!"

"The ring of holes!" cried Locke. "It looks as though a rock-eating tere-do or termite had been busy."

The four of them clustered around the meteorite which could have been likened to an immense kettle drum in shape. In size it was not more than six feet across. Any one of them could have reached to the center by leaning over the rim.

"See!" cried Miriam, her voice trembling. "There is a sort of beveled groove in the center where the feet and tail of the dragon must have fit under the edge."

"That's right!" agreed Ashley in a strained voice. "It looks like conclusive proof. Try the dragon in that spot, Locke."

Cradling his stubby rifle carefully against his chest, Graham leaned forward with the girl and Ashley as Professor Locke brought forth the little red dragon and reached in to see if it fitted the smooth circle in the center of the plane surface of the meteorite.

With an ease that was almost precisionlike the smooth base of the dragon fitted the spot. Professor Locke gave it a slight twist to the left to lock it in position.

Instantly there was a sudden flash of blinding light, and the astounded Graham felt himself falling through infinite space as his senses left him. . . .

Graham came to himself to find that he was lying on a rocky escarpment. Overhead a strangely distant and yet immense sun was shining hotly down upon him.

There wasn't a tree, a shrub, or even a blade of grass in sight. Not a single crumb of earth—only this rugged and lavalike terrain. Not even a single insect crawling or buzzing along. It was terrifying.

He sat up, surprised to find that he

was all in one piece and free of bruises and aches or pains. At his movement something clattered at his side, and he grabbed up his little magnum rifle which had slid off his chest.

Staggering erect, he was amazed to discover that he stood clothed and accoutered just as he had been—long ago? When he watched Professor Locke fit the tiny red dragon to the depression in the meteorite!

He looked wildly around him. As far as he could see there stretched nothing but a rugged, undulating, barren rocky plain.

No one else was in sight. Where were the others? What on Earth had happened to him?

FOR a moment he had the soul-shaking thought that somehow he had been transported by means of the mysterious meteorite to Mars, or the barren surface of some nameless asteroid. Then he argued to himself that this was impossible.

There was little or no air on such places, and he found himself able to breathe quite easily. Furthermore he could detect no change in the accustomed pull of gravity.

But he could not fathom this desolate region which was like nothing he had even seen on Earth. There was no spot of stark rocky terrain of this extent anywhere in the world. Then the answer came to him.

This was a dream—a nightmare. There could be no other logical explanation.

When or how or why it began he could not figure out at the moment. He would just have to wait until it passed. In the meantime, he couldn't just stand here and wait. He had to do something!

He set out blindly, still gripping his rifle and walked toward the left, marking his course by a slightly higher rocky outcropping in the distance.

He had a splendid sense of direction and an excellent training in woodcraft, but how could he exercise either ability here on this illimitable rocky plain which was as hot as Death Valley and as monotonously stony as a gray eternity?

At first he was glad that he met no

weird or strange creatures of this rocky wilderness. Then the utter silence and loneliness of the desolation began to get him, and he found himself longing for anything to happen to break the horrible spell.

He must have been walking for a couple of hours during which time he noted a gradual tendency of the uneven terrain to slope downhill toward the right. He fought against this at first and then finally surrendered to the easier walking.

There were no ridges that could really be called hills; the rolling surface of the landscape was more like the sand dunes of Indiana, or the tundras of the Arctic wastes.

As he rounded the tapering end of one of the low dunes he caught sight of a flash of white movement some distance before him and off to his left. He halted, his heart coming up into his throat, as he shaded his eyes and stared.

Then he let out a cry of delight. The distant figure was that of a man. It was George Ashley, replete in sun helmet and saber, toiling along.

"Ashley! Hal-loo! Ashley!" he called.

The other man jumped like a shot rabbit and whirled around. He saw Graham and began running to meet him. Graham increased his own pace.

As they drew near to each other the chemist saw that Ashley's face was distorted with fear.

"Graham! Graham!" sobbed Ashley. "Where in the name of heaven are we?"

"I was hoping you could tell me that," said Graham a bit shakily.

"Don't you know?" Ashley almost screamed. "I thought you knew this accursed country."

"There's no spot in Argentina like this. Get a grip on yourself, man. If we haven't been blasted somewhere into space, this is a dream."

MISERY washed in a gray tide across Ashley's features and his eyes were bright and feverish.

"If it is a dream, wake us up!" he pleaded. "I'm about to perish from thirst. I've been wandering alone for hours. What can we do?"

"Keep walking," said Graham stoically. "This way seems to lead gradually downhill. The last thing I remember was that flash of light when Locke fitted the dragon ruby into that spot in the meteorite."

"That's all I can remember, too," agreed Ashley, dazedly rubbing his forehead. "Locke speculated deeply on where that blasted meteorite might have come from. This hot, rocky plain makes me think of Mercury. Do you

the little canyon they were following, where it converged with another, they came upon Professor Locke sitting in the scant shade of the western wall.

The physicist looked up in calm pleasure. He was not at all surprised. Both younger men quickened their pace to reach him, shouting a greeting and hurling questions all at the same time.

"You mean that you don't know where you are?" asked Locke queerly. "Don't you remember Dr. Trommer's

TIME AND SPACE MEAN NOTHING TO THE MYSTERIOUS
CONTRATERRENE MAN

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think it possible that we have been transported to Mercury? Look how big and hot the sun is."

"Now I know this is a dream," said Graham, "and you are one of creatures in it. You are voicing the same sort of thoughts I've already had. Come on, let's keep going. Maybe I can dream up the others. I might even dream up the camp and the natives."

They walked wearily onward. The going got no rougher under foot, but the surrounding hillocks grew higher on either hand, more rugged, as though scooped out and channeled by some giant's tool.

Just as they reached the mouth of

experience? That will give you a clue."

Ashley stared at him stupidly. Graham merely waited in grim and expectant silence.

"We are on the meteorite," declared the physicist. "Reduced somehow by that weird radiation to almost microscopic size."

"On the meteorite?" repeated Graham. "Absurd!"

"Yes, isn't it?" agreed Locke gravely. "I should have been more careful. I should have been warned by what happened to Trommer. It seems that the radiations in the base of the meteorite have the peculiar effect on matter of

our known universe of shrinking things, compacting the atoms, as it were. I don't understand it at all yet. I've got to learn more before I attempt to figure it out."

"You mean—" faltered Ashley, "that—that the meteorite came from some place *outside* the known universe?"

Professor Locke nodded solemnly.

"Your theory isn't very tenable, Professor," objected Graham tersely. "I shouldn't be arguing with one of the figments in my own dream, but—well, if we fell onto the meteorite, why didn't Dr. Trommer?"

"Because we were leaning over it," replied Locke easily. "Trommer was pulling away from it and must have fallen over backward. That was why he didn't shrink as much as we have. He fell away, out of the sphere of radiation."

"I don't swallow that at all," said Graham shortly. "But, if it's true, then Miriam Trommer must be lost somewhere on this forsaken hunk of rock."

"Without doubt," agreed Locke. "I have been thinking about it, and I—"

A SHRILL scream of sheer terror filtering down the widening canyon cut through his speech like a knife.

"Miriam!" the physicist cried, leaping to his feet and sprinting down toward what would be—if he were correct in his supposition—the center of the rocky plain.

Graham and Ashley raced after him. Already tired from their long and gruelling walk, they were hopelessly outdistanced by the older man.

Almost neck and neck, they ran out of the defile onto a flatter plain before them. They halted in complete dismay.

There, towering before them was a blood-red monster with vivid green eyes. It was the grandfather of the little ruby dragon, a huge but exact replica of it. But this one was horribly alive!

The monster held Miriam Trommer above the rocky ground with its taloned left forepaw.

Even as they stared, the horrible nightmare reached out in a lightning-swift jab with its right foreleg and struck the courageous Professor Locke

down to the rock beneath it, mangling him with its terrible talons.

Ashley showed his true metal at this. It may have been the courage of despair, but it was courage. He drew both his revolver and saber and charged madly at the horrible apparition, firing his gun as he ran.

He might just as well have thrown grains of rice against its horny beak and scales.

The professor gave one despairing shout as he twisted his agony-torn face to look back at them.

"Never mind me," he groaned. "Save Miriam if you can."

Bob Graham found himself singularly unimpeded by the usual nightmarish lethargy. His mind working as swiftly and smoothly as a machine, he snapped down the bolt action of his magnum rifle, raised the weapon and fired point-blank at the awful creature's left eye.

He found the time to hope that the dragon had enough of a brain to be shocked to death instantly by that speeding bullet which simply blew up from sheer impetus when it touched anything.

There was a sudden explosion, as though the entire cosmos was being torn apart in one vast cataclysm. Graham felt himself being hurled back as if from the out-rushing gases of a titanic detonation. Everything blacked out for him.

"The end of my nightmare," he found himself thinking a bit grimly as he lapsed into unconsciousness.

When he came to his senses he found the welcome surroundings of the Argentine plateau about him. He was lying beside the bottom half of the strange meteor, still clutching his rifle. Just beyond him he could see the leg of George Ashley.

Trembling with an ague more mental than physical, he scrambled to his feet to investigate. Ashley was just stirring, apparently unharmed. Beyond Ashley lay the body of Miriam Trommer, limp and white, but seemingly unhurt.

On the other side of the half-globe lay the body of Professor Warren Locke. There were deep gashes in the professor's arms, and his shirt was a bloody mass. He was dead.

WITH Ashley's help, Graham revived the girl. Then they took stock. The camp was deserted. With their usual alacrity in the face of the unaccustomed, the natives had departed.

"That explosion," muttered Graham shakily. "When Professor Locke fitted the ruby into that depression he must have made some sort of electrical contact, and it electrocuted him and knocked us all out."

"You—you mean—we weren't on that terrible rocky desert at all?" faltered the girl.

"You don't remember, darling?" demanded Ashley incredulously.

"What?" cried Graham. "Did you both have the same—dream?"

"It was no dream," stated Ashley, shuddering. "You and I wandered for hours until we found Locke—and then Miriam, in the clutches of that red dragon."

"I was lost for hours, too," said the girl, "until I blundered into that awful beast, and you three men came running to save me."

Graham stared at the pair of them without speaking. Then he turned to survey the body of the dead physicist.

Locke had planned to figure things out and rationalize them. But Locke, the only one of them who might have got at the truth of the matter, was dead. Desperately Graham clung to his reason.

"Then it was mass hypnosis," he declared firmly. "We all dreamed the same dream."

He looked wildly around for some

proof to substantiate his belief. His eyes fell on the flat surface of the meteorite. The little rubylike dragon lay on its side, knocked out of its setting.

"See!" he articulated, pointing. "The professor jarred the dragon out of position as he was blasted back. That broke the contact which generated the terrible current."

He gingerly raked the rubylike carving from the top of the meteorite with his rifle barrel and examined it in fascination.

Miriam Trommer shuddered in Ashley's arms.

"I don't ever want to see that thing again," she declared.

Graham suddenly had no intention of showing it to either of them. He thrust the thing into his pocket.

Ashley laughed shakily.

"I guess your theory must be the right answer, Graham. There's no other way of explaining how we returned to our natural size. What are we going to do about this meteorite?"

"We're going to dynamite it into smithereens," promised Graham grimly. "Then I'm going to get you two back to Buenos Aires as fast as I can."

Which he did. The rubylike dragon Graham kept for a souvenir. He had explained the terrible experience to the complete satisfaction of Ashley and the girl and the Argentine government.

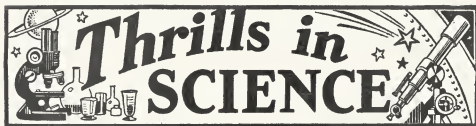
But he was never able to explain to himself that one empty shell in his magnum rifle, or the fact that the ruby dragon's left eye was gone from its setting.

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Thumbnail Sketches of Great Men and Achievements

By OSCAR J. FRIEND

WHEELS IN THE HEAD

John Harrison Invents the Marine Chronometer

BY THE dawn of the eighteenth century the world had become definitely clock conscious. Thanks to the pioneer Brother Gerbert and others who followed him, clock-making had developed to the point where a constant and even pressure had been applied to works by the use of escapements and fuseses so that a piece of spring-driven mechanism would not run fast or slow because of the varying pressure of the main spring.

That temperature had an effect on the works was also known. And jewel bearings for watches were introduced in 1704 by Nicholas Facio, a Swiss watch maker in London.

Navigation and map making had kept pretty well abreast of the times, too. Thus it was that mariners had discovered that their methods of telling time were inaccurate. More than this, accurate time telling was essential to establish position out on the trackless ocean.

Hence, in 1713, the British Government offered a reward of twenty thousand pounds for the construction of a chronometer that would determine the longitude within thirty miles. Now twenty thousand pounds was a lot of money in that day. It isn't hay in 1942.

An obscure carpenter by the name of Harrison, living in the little town of Foulby, in Yorkshire, went home to supper, filled with the details of this munificent offer and quite befuddled as to the principles involved. But John would know. John was always working with wheels and springs and gears in his spare time. Ever since he had been a small boy John had been fascinated by wheels and machinery.

Harrison despaired of making a good carpenter of his son who had wheels in the head and gears on the brain. Now, maybe, for the first time, John's queer obsession could be put to good account.

But the elder Harrison was doomed to disappointment. His twenty-year-old apprentice son did not understand the proposition either. Nevertheless, it was a momentous day for the entire world in the Harrison cottage when John Harrison

could not explain the matter to his father.

"I'm sorry, sir," he admitted, "I don't know. But I'm going to find out."

And find out he did. By reading every book he could get on the subject, by asking questions of every learned man he met, John Harrison finally mastered the principles of navigation and understood precisely what was meant by longitudinal time at sea. He explained it to his father.

"You see, sir, the stars, the sun, and finally the compass tell the mariner direction, but they do not show him his position in relation to where his ship was on the previous day or at any previous time—even though he may know the vessel's sailing speed. If he doesn't know the exact time, or how many hours have elapsed since the last shooting of the sun, he could be off hundreds of miles in his estimate of position. Likewise, a clock that runs fast or slow could mislead him by hundreds of miles. So I am going to construct a clock which will keep accurate time."

Thus it was that horology became John Harrison's life work. But knowing what had to be done and successfully doing it were two vastly different things.

Time went on, and for years John Harrison labored with his wheels and gears and problems. In 1715 he made a clock of wooden wheels that still keeps good time today in the patent museum at South Kensington.

In 1726 he devised his ingenious "grid-iron pendulum" which maintains its length and therefore its steady beat unaltered despite atmospheric and temperature variations.

He followed these inventions with a recoil clock escapement in which friction was reduced to a minimum.

He was the first to employ an effective "going ratchet," a spring arrangement for keeping the timepiece going at its usual rate during the interval of being wound up.

But in spite of all these clever ideas and his careful attention to minute details, he was no nearer the solution and the hundred-thousand-dollar reward than before. For no power on earth could keep a pendulum clock of any type functioning prop-

erly while a ship was rolling and tossing at sea.

"This is no problem for a clockmaker," he said one day in thorough disgust. "It is really a job for a watchmaker."

"Well, John," observed his wife patiently, "you have spent a great many years on that idea. Why don't you make a master watch?"

For a moment John Harrison stared at his wife, his mouth open. Then he closed his jaws with a snap.

"I've been a fool," he said.

"On the contrary," corrected his wife, laughing and kissing him, "you have been a successful clockmaker—and no one else has yet claimed the government reward."

Harrison set to work at once on this new tack. The problem was to provide a timepiece which would keep time within two seconds per day for a voyage to the West Indies and back, a period of about five months.

After several trials and failures, Harrison finally produced a marine chronometer which varied less than half a second per day. All his skill and study and years of working with springs and gears went into the making of this timepiece.

In 1762 John Harrison dispatched his son William on a voyage to Jamaica to test the final masterpiece. Upon William's return to Portsmouth, it was found that the Harrison chronometer had lost only one minute, fifty-four and one-half seconds the entire voyage, thus determining the longitude within 18 miles.

Nearly fifty years after the reward was announced by the British Government, John Harrison, the carpenter's apprentice

who had wheels and gears in his head, claimed the full award.

The secret of his marine chronometer was another ingenious Harrison invention. It was a "compensation-curb" designed to alter the effective length of the balance-spring in proportion to the expansion or contraction caused by variations of temperature.

The last big step in the perfecting of



JOHN HARRISON

time telling had been made, and today steamships and battleships run on schedule time because a Yorkshire lad had "wheels in the head."

THE EYES OF SPACE

Zacharias Jansen and Hans Lippershey Discover the Telescope

LOATED on Mount Palomar in Southern California is the largest telescope in the world, an instrument with a 200-inch reflecting disc, so powerful that it can bring the moon, in effect, within twenty-four miles of the earth. The secrets of the far-flung stars of the known universe will remain secret no longer.

Requiring a steel dome 135 feet in diameter, this gigantic eye of space is mounted in a tube 60 feet long, a far cry indeed from the first telescope man invented.

It was a sort of littered establishment in the little city of Middleburg, Holland. Littered with odds and ends of metal, littered with an amazing assortment of glass and crystals of all shapes and sizes, littered with children. It was the year 1590. The establishment was the home and business house of Zacharias Jansen.

Zacharias was a spectacle maker, and he was blessed with progeny. Children were always getting under foot like a brood of chickens. But Zacharias did not mind. He was a tolerant man, and he was used to living in a constant state of mild confusion. It was often remarked of him that

it was a wonder he ever found materials or tools to work with.

Spectacle frames, shafts, parts, lenses were scattered about the place. Various samples of glass, ground and unground lenses were to be found in stray drawers, on shelves, on the mantel, on the workbench, in the pockets of *Mynheer Jansen's* clothes—anywhere!

The Jansen children played with the heterogeneous and unclassified lenses as casually as a modern child might toy with marbles. It didn't make much difference; this was before Benjamin Franklin invented the bifocal glass, before there were accurate instruments to measure the exact need of a failing eye, before there were compound prescriptions for grinding lenses to correct myopia, astigmatism and such conditions which were so undreamed of there weren't even any words to describe them.

Today Zacharias had company. Rather, he was in a sort of business conference with a friendly rival spectacle maker.

Mynheer Hans Lippershey had brought over some specimens of glass newly received from Vienna, and the two men were

deep in a discussion of magnification for reading glasses.

Unheeded, the Jansen children played about the littered workshop. Back in the kitchen *Vrou* Jansen was making cheese. Everything was peaceful, if a little noisy.

Of a certainty, nobody dreamed that this was really an epochal day and that a discovery was hovering closely about, a discovery of such magnitude as to rivet the attention of that great Italian genius, Galileo, for years and which was to set in motion a chain of events and discoveries culminating in a 200-inch telescope on a mountain across the ocean in a barbaric land Columbus had discovered less than a hundred years ago.

Karl, the eight-year-old, had unearthed a concave lens which his father had misplaced behind a book some days before. He was holding the glass to his eye and squinting roughly through it at everything he thought of to try it on.

Fritz, his eleven-year-old brother, had filched one of the new lenses brought over by *Mynheer* Lippershey. He was gazing through this convex lens out the window and at the good burghers waddling along the street.

"Let me see that one, Fritz," cried Karl. "This one is no good. No wonder *Vater* lost it."

Willingly enough, Fritz relinquished *Mynheer* Lippershey's bit of glass. Without removing the concave lens from before his eye, Karl held the convex lens in a line in front of the other, as far as his chubby little arm could reach.

"Wouldn't it be funny if the mayor had only one eye and had to wear his spec-

tacles like this?" he cried. "He would go along the street like a man with a lantern."

Suiting his action to the words, Hans marched toward the window, centering his glance through both glasses, comically screwing shut his off eye. His double lenses were pointed at the steeple of the church down the street.

Suddenly, without warning, the entire church steeple and weather vane leaped at him.

Hans let out a cry of fright and dropped both bits of glass. He ran, screaming, to his father.

Mystified, Fritz picked up the lenses and tried them. After a couple of changes he succeeded in getting the same combination Hans had had. And the church steeple leaped at him!

By this time his father and *Mynheer* Lippershey had become aroused and descended on the lad. Faces white with awe and fright, both boys babbled of the miracle.

The two men swiftly experimented.

It was so! A double lens arrangement magnified distant objects. A pair of playing children had accidentally discovered the principle of the telescope and microscope.

Highly excited, the two spectacle makers mounted the two lenses on a board, and the whole family and then the whole neighborhood took turns at looking through them. To fashion a more convenient tube to hold the lenses was no trouble at all—and the first telescope had come into being.

Science and astronomy had leaped ahead a thousand years!

DESCENT INTO THE ATOM

Sir William Crookes Propounds the Electron Theory of Matter

IT BEGAN ordinarily enough in the laboratory of that house in Kensington Park gardens in the year 1861. By this time the atomic theory of matter had become pretty generally accepted, and the atom was conceded to be the smallest building block in the universe.

And it wasn't that the studious man now bending over the eye-piece of his microscope contested this. In fact, he wasn't even thinking of the atomic theory as he studied the queer residue from the manufacture of sulphuric acid.

Suddenly he became excited and leaped up from his instrument. He got down a book and turned to his tables of the elements. His eyes began to glow as he figured swiftly with paper and pencil. Then, fingers trembling in the immensity of his discovery, he began a series of experiments which resulted in the isolation of a missing element—thallium.

Quite a notable achievement in itself, but this was only the beginning. A train of events had been set in motion which were to dangle fire across the years, years during which this youngish and fairly obscure scientist called William Crookes was

to become famous and knighted, until they reached a smashing climax in 1898.

Crookes had already been toying with the idea of a sealed tube from which the air had been exhausted, a tube containing two or more electrodes known as the cathodes and anodes. Through this vacuum tube Crookes had been passing electric discharges and studying the odd effects on the remnants of gases which he had not been able to remove from his tubes.

The results he got from his tube experiments were radiant glows of a phosphorescent or greenish-gold sheen on the glass opposite the cathode.

Now, in the course of his investigations on the properties of thallium, he observed the curious behavior of the hot element while being weighed in one of his vacuums. This led him to the construction of the radiometer.

But the greatest thing of all was the change now taking place within his own mind. William Crookes no longer found the theory of the atom as the basic building block tenable.

"Gentlemen," he told his assistants and associates in 1870, "I have shown you my

experiments with the Crookes Tube. Have you any idea what this glow is?"

None of them had. But Crookes himself had a very definite opinion. He went on.

"This, in my opinion, is radiant matter in what, for want of a better term, I shall call a fourth state."

"Meaning what?" demanded a testy old gentleman, a member of the Royal College of Chemistry.

"I mean,"—and Crookes drew a deep breath—"that I have discovered a form of matter in an ultragaseous state. It is—well, between matter and energy. I mean there is a smaller thing than the atom. If we can break down the atoms, we will find that they are all composed of the same particles in varying combinations. In other words, I say that the basic building block of the universe is just one kind, and it is infinitely smaller than the atom. There is no other way I can explain my vacuum findings."

"Rubbish!" snorted the testy old gentleman. "Have you any proof, aside from your theories, of the disintegration of the atom?"

"No," admitted Crookes honestly.

"Ridiculous! Every first-year student knows that the atom is the smallest unit. I refuse to stay here and listen to such chimerical babbling. You had best confine your efforts to the sanitation department, young man."

William Crookes flushed, and there was a strained silence. In that moment strife was born, with the preponderance of weight and entrenched proof on the side of the old gentleman of the Royal College.

Undaunted, however, William Crookes never retreated from his position. In 1883 he began an inquiry into the nature of certain rare earths, and his observations on yttrium strengthened his theory that all elements were produced by evolution from the same primordial stuff.

All this time Crookes did other jobs, even finding time to write and edit various books on chemistry, dyeing, beet sugar manufacture, calico-printing, and sewerage.

Knighted in 1897, he was constantly con-

sulted by the government on chemical questions. But his failure to convince the Royal College of Chemistry to his theory of radiant matter always rankled.

Until that momentous day in 1898 when Pierre and Marie Curie discovered radium. At a meeting in his private laboratory Sir William Crookes read the report of the Curie couple that proved beyond the shadow of a doubt that radium was an element disintegrating from uranium, that it was an intermediate stage in the change



SIR WILLIAM CROOKES

from uranium to lead—that the atom was not the smallest bit of matter—that the Crookes theory had finally been handsomely substantiated!

The old gentleman of the Royal College of Chemistry was the first to break down and congratulate the eminent physicist who thus became the father of the electron theory of matter and whose indefatigable researches through the years had led him to invent the instruments and tools of science by which men who followed him could unlock the secret of the atom.

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A small boy was walking over the heads of the natives!

Kids Don't Know Everything

By FRANK JOHNSON

It Took Old Man Roberts to Show the Interplanetary Quiz Kids That Gold Is Still Where You Find It!

CARL GREIDER jabbed his finger at the fore-rocket control, grinned as the unexpected acceleration threw Roberts heavily against the rear wall of the old space tub. When Roberts came to himself again, his forehead was cut, and the blood had stained some of his gray hair crimson. But he didn't seem to notice the cut.

"So you're not going to give me any-

thing to eat," he repeated blankly.

"Nope." Greider's eyes swept over the older man with disgust as he himself swallowed the last of his piece of Synthevite A. He smacked his lips noisily. "There's just enough for me."

"But I'll starve! And it's my food. It's my ship, too. You stole it—"

"By Jupiter, you say that again, and I'll put an end to your worries about

food for good! Darned if I'm not sorry I let you live."

"I've helped pilot the ship," Roberts protested.

"That's the only reason you're not dead now." Greider let the automatic control take over as he lazily began to inspect his fingernails. "Listen here, you old fool. There's just enough food for one man for a week. And I'm the man. Get that? But a week's supply isn't too much, even for me. So tomorrow we're going to land on Ganymede.

"If we find anything to eat, maybe you'll have some. I'm making no promises, but you do know how to handle this ancient piece of junk, and I can use you. But if we don't run across food—well, that'll be too bad for you."

He turned away from Roberts in contempt. He had no fear that the old man would try to jump at him while his back was turned. Roberts had tried that before, and got the senses knocked out of him for his pains. Greider had twice the other's strength, and could have taken care of himself even without the electropistol at his side.

Roberts seemed to become aware for the first time of the blood drying on his face. He wiped it away with his handkerchief, and stared dully before him. He hadn't eaten since the previous day, when Greider had hired his old space boat for a short trip, and then hijacked it. His stomach had for the past few hours been squirming with hunger.

But even worse than the hunger was the dull fear that gripped him. There was something deadly about Greider, something he should have recognized at sight. He must have been blind to trust himself on a lonely run with such a passenger. The man was brutal, contemptuous of human life.

Roberts had no illusions as to what might happen to him on Ganymede. Food or no food, Greider would get rid of his unfortunate victim. He would want to leave no witnesses behind to testify against him some day in an Interplanetary Court.

Worn out by hunger and fear, Roberts fell after a time into a doze that

lasted for many hours. Greider was fortunately busy with his own evil thoughts, and let him alone. When he awoke, only slightly refreshed and more hungry than ever, Greider was already beginning to decelerate for the landing on Ganymede.

THE ship creaked uneasily as the anti-spin rockets began to blast in pairs. Greider muttered a curse at the stolen vessel, and shouted to Roberts. The old man came forward eagerly. No one else could handle his boat the way he could. It might be ancient, a full half century behind the present models, but it would take you any place you wanted to go—if you handled it right. His fingertips caressed the studs on the control board with affection.

He began to ease the ship down to the surface of Ganymede. Most of this satellite of Jupiter's was bleak and rocky. But from far above one hemisphere, Roberts had seen frequent patches of vegetation. As they descended, he caught sight of several silvery ribbons of water and numerous lakes. The ship settled beside one of the lakes and nestled comfortably into a hollow between two hills, like a sparrow settling into a dust bath.

Roberts followed Greider out of the ship, and filled his lungs deeply. Ganymede air was good, after the recirculated stuff they had been breathing in the ship. He wondered how long Greider would allow him the pleasure of breathing.

In the distance, a tiny figure appeared and seemed to be staring at them. This was a native. The inhabitants of Ganymede were of the humanoid type, resembling a cross between the men of Earth and of Mars. They were supposed to be hospitable. Roberts judged that so far, they had had little experience with visitors of Greider's type. After a few days with him, they would be less inclined to welcome strangers.

Greider slammed the door of the space ship, snapped shut the lock and pocketed the key.

"Get started," he ordered.

"Where to?"

"We're going over to see that na-

tive. You don't think I'm going to leave you alone with this boat of yours, do you?"

They began to walk. Even to Roberts' old muscles, the light gravity made this exercise a pleasure. But as they approached the native, he disappeared. Greider began to shout after him, and then stopped suddenly. The edge of a crowd of several thousand of the natives had come into view. They were all gazing in fascination in a single direction.

The two men followed their eyes, and Roberts almost choked.

"My God!" he exclaimed.

A small boy of about twelve was walking over the heads of the natives. There was nothing under his feet. He was walking on air.

"The kid's wearing an anti-gravity belt," Greider sneered. "Why the excitement?"

"An anti-gravity belt keeps you up, but you can't walk in it. You have to paddle around. This kid is walking!" Roberts said.

The boy pointed to one of the natives, who shrank back. But the boy bent over, seized the terrified man by the hand and seemed to lift him into the air.

"Why, the kid's got the strength of a horse!" breathed Roberts.

The native's face was working with fright. The boy turned to the crowd and said a few words.

"Martian nonsense syllables," commented Greider. "Magicians use them. They mean about the same as 'abracadabra'."

Suddenly both the boy and the native disappeared. There was a yell from the audience, and then the native reappeared again at the outer edge of the crowd, with the boy at his side.

DESPITE himself, Greider seemed impressed. He pushed forward, Roberts close behind him. There was no difficulty in getting through the crowd, as none of the natives was too anxious to remain in front. Greider reached the boy magician and smiled genially. With that coarse face of his, the smile made him look like a diamond very much in the rough.

"Hello, son. Got time for a little talk?"

The boy gazed at him in wonder.

"What a remarkable coincidence! Earthmen! Fellows, come here!" he shouted.

For the first time, the two men were aware of the existence of other youngsters. The one they had first seen introduced himself.

"My name is Whitney. I'm twelve years old, and I'm from Earth."

He put out his hand. Greider shook it gravely. He was a murderer, but the man had a way with him.

"My name's Greider, and this is Mr. Roberts."

"How do you do, Mr. Greider." The boy cleared his throat. "Permit me to present to you, gentlemen, my colleagues. We are commonly introduced as those Four Sensational Intelligences of the Space Waves, those phenomenal Master Minds of the Younger Generation, those Paragons of Intellect—the Quiz Kids!"

"I seem to remember—" Greider began softly.

"My own specialty is science and mathematics."

One of the other figures stepped forward.

"This is Tanap," Whitney said. "He is eleven years old and is a native Mercurian. He has all history in his mind."

A second figure advanced.

"This is Sonar," Whitney went on. "He is only ten, but he knows all there is to know about music. He is from Mars. Last—and as far as size is concerned, least—is Harj, from Venus. He is a member of the small race; and at thirteen, though far from mature, he has already reached almost his full height. He has an enormous number of odd facts at his webbed fingertips."

Roberts stared at them. Only Whitney was completely human, but the others were close enough. Except for the way their eyes and ears were set, there was little to distinguish them from the people of Earth. They all had that disconcerting look of kids who know too much for their parents.

Greider had a faraway expression in his eyes.

"I seem to remember something

about a reward," he said.

"Oh, yes," Whitney nodded. "We heard the newscast, too. Fifty thousand dollars, Mars standard, to anyone who rescues us."

"Youngster, I've got a spaceship here. You're rescued!"

Greider's eyes rested for a moment on the older man, and then passed on. Roberts knew what the glance meant. That space tub of his would be crowded with six in it. And he himself would be a nuisance for Greider to have along when the ship docked at Mars.

Better to get rid of him, Greider would figure. It would be easy to arrange an accident that the kids wouldn't see. Then, too, there'd be no reward to split—

"I beg your pardon," Tanap spoke up. "We do not wish to be rescued."

Greider had the air of an indulgent father.

"You don't?" he said.

"Of course not. We have our own spaceship. And it will soon be ready to take off," Tanap told him.

"Is it a good ship?" Greider's eyes narrowed.

"Latest model Tronheim," replied Tanap proudly. "Ten passengers. Food and supplies for three months. You see, we were stranded on Ganymede originally as the result of rascality on the part of our manager. We were in the midst of an interplanetary personal appearance tour when our ship's motor was disabled. Our manager absconded in the lifeboat with our entire earnings."

"I have come to the conclusion that the man is a complete scoundrel," remarked Sonar, aged ten.

TANAP continued.

"We crashed on Ganymede," he said. "But fortunately our emergency rockets functioned to perfection. They braked our fall sufficiently to prevent injury to us. The ship itself has an iridium steel shell, and was unharmed. We at once set to work to repair the motor.

"The first step in our plans was to impress the natives." He coughed modestly. "Whitney, here, thought the best way would be to show them

some elementary experiments in physics."

"You gentlemen saw me walking on air," Whitney explained. "I managed to do that by wearing an anti-gravity belt and magnetized shoes at the same time. Ganymede is the home of magnetic storms. It exhibits peculiar magnetic properties, you know. The surface of the planet itself attracted the shoes, and prevented me from turning in the air."

"How did you manage to lift that native off the ground?" Greider asked.

"I'm ashamed to say, Mr. Greider, that my apparent physical strength was the result of a mere subterfuge. I had Harj slip an anti-gravity belt on the man. Harj is so small that he is not easily noticeable in a crowd. As for my sudden invisibility, that was due to the creation of an intense electromagnetic field by Sonar and Tanap, who manipulated some of the machinery we have temporarily removed from the ship.

"Light was made to curve about my body and that of the native I had lifted up, so that it reached an observer's eye without ever having touched us. Against the background of the sky, no distortion of the view was perceptible."

"Simple enough," Greider muttered. "But how would all this have helped you with the ship?"

"We needed food. Impressed by our abilities, the natives have already brought us some."

Roberts had a vision of a big portion of Synthevite A lying on a platter next to a goblet of ambrosine. His stomach seemed to turn over at what his imagination had conjured up.

"We don't know whether the stuff they've brought us is poisonous to non-Ganymedeans or not," Sonar said doubtfully. "Nothing civilized, you know. Berries, flesh of native animals—things of that sort. Decidedly primitive and unappetizing."

"I'm an expert on primitive foods," Roberts told them. "Do you mind letting me have a glance at some?"

There was a black look on Greider's face, but Roberts was past caring. As he stared at the big red berries and the lump of brown flesh, it was all he

could do to control his eager fingers. He put a berry in his mouth and chewed it slowly.

He had once seen a berry of that sort before. It had come originally from Earth and had been called hay-berry, or strawberry—something of the kind. The flavor was of the fruity ester type familiar in Synthevite D foods, but there was a tart acidity about it that made Roberts' mouth pucker. Starved as he was, he couldn't help making a face.

"Oh, I say!" remarked Whitney. "Is it as bad as that?"

"It's edible," said Roberts.

To prove his words, he ate all the berries as well as the piece of meat, the mere thought of which would ordinarily have made him sick. When he had finished, the boys looked at him with admiration for his courage.

"I suppose we can eat it, if we're forced to," Tanap admitted. "And I'm afraid we may have to remain here for a time. You see, we're none of us expert mechanics. It will take us at least two weeks to repair the motor."

"I can give you a hand there," Roberts offered.

LITTLE Harj cleared his throat importantly.

"Of course," he asserted, "even with the ship repaired, we may not be able to leave until the period of magnetic storms is past. These disturbances occur every eight of Earth's years. Of unexplained origin, they are of an intensity unparalleled in the rest of the Solar System.

"During the six months throughout which these storms sometimes rage, space navigation is extremely difficult near Ganymede, as well as near those others of Jupiter's moons which approach it too closely."

"Quiet, Harj! My colleague," declared Tanap apologetically, "has a tendency to be unduly loquacious."

Greider had been silent, thinking. Now he spoke up briskly.

"If you kids expect to get off this satellite alive, you'll need our help. We can take you in our own ship or help you fix yours. Either way, it's a rescue, and my partner and I share

the reward. Get that?"

"Yes, sir," said Whitney.

Roberts smiled mirthlessly. He was a "partner" now. He wondered how long it would be before the partnership was "dissolved"—by the inevitable stab in the back.

"Now that we understand each other," Greider went on, "lead us to your ship."

The Tronheim was a thing of beauty, its smooth hull a glistening mass of iridium steel. Roberts thought of his own wheezy tub, and for the first time in his life was ashamed of it. Compared to the Tronheim, it was as ridiculous as the first model Q's. Its small size, its awkward lines, the dull yellow of the golden hull, built when gold had first become cheap and fashionable as a result of MacDonald's sea-water process—all these things dated it, shouted aloud its age.

The Tronheim motors, with ten times the power of his own ship, were just as simply constructed. Roberts saw quickly what had gone wrong. A pair of the ignition jets had fouled, preventing the forward rockets from firing. Ten hours of work would suffice to clear all the feed lines, leaving the jets and firing tubes as clean as a whistle.

Greider looked a question.

"Well?" he said.

"Three days' work, by Earth time. Maybe a week."

Roberts would have to stall, think of something to delay completion of the job. Until the motors were fixed, Greider wouldn't want to get rid of him.

If only these precocious kids were a little less intelligent, Roberts might stretch the time to two weeks, taking everything apart and then putting it together again. But these four super-educated youngsters would be hard to fool.

"We may as well get to work right away." Greider threw an arm over Roberts' shoulder and did his best to look genial. "We've palled around for quite some time now," he explained glibly to the kids. "I'd be lost without old Grandpop Roberts."

"Old Grandpop" Roberts said nothing. At first, he thought that Greider

was overdoing the friendliness act. But a little further consideration showed him that Greider wasn't. If good old Grandpop was to die soon, Greider could best avoid suspicion later by being on good terms with him just before his demise. Greider was looking ahead to the time when the repair job would be finished.

Stalling was a little harder than Roberts had anticipated. Greider, in a hurry to get the ship fixed, voluntarily took over the job of helper. The kids hung around, watching every move. To his horror, Roberts found that despite all he could do to stall, the feed lines were being rapidly cleaned. Two more days, and the ship would be ready to set out.

HE AWOKE on the morning of the third day in a cold sweat. Would Greider kill him before setting out, or would he wait until they had left Ganymede? The question tormented him all morning. And then, just at noon, as Greider came over and put a hand on his shoulder, he had a reprieve.

It came in the form of a dull rasping sound. Greider looked up and saw twelve-year-old Whitney lightly drawing a small gray-green pebble against the iridium-steel surface of the Tronheim. When he took his hand away, there was a deep scratch in the ship's metal skin.

"What are you trying to do, ruin the hull?" Greider demanded.

"I'm just seeing what karite will do."

"Karite?"

"The only mineral yet found that is harder than diamond," Whitney explained. "It can cut diamond with as much ease as the latter can cut putty. It is a complex mixture of carbides and silicides, and contains many of the rare Earth isotopes. There has been a long series of vain attempts to produce it synthetically. It is extracted from its matrix—"

"Hold it, sonny boy," Greider said harshly. "Just tell me one thing. Is it worth much?"

"It is more valuable than diamond."

Greider's eyes glittered with excitement and greed.

"And is there more where this came from?"

"There are a large number of specimens embedded in an outcropping of high-volcanic gansite. As I have already mentioned, the numerous attempts to produce it synthetically have been miserable failures. The first attempt, by Baker and Gottschall seventy years ago—"

"Why in space didn't you tell me about the stuff before?" Greider almost shouted.

"It is a government monopoly. Private individuals are not allowed to mine it," Whitney replied matter of factly.

"Who's going to stop us?" There was a grim look in Greider's eyes as he waited. There was no answer. "I thought you'd see it my way," he said. "Let's get going!"

A half hour later they had started, but not for home. They were bound, all six of them, for the place where Whitney had picked up the gray-green pebble.

Greider was cleverer than Roberts had credited him with being. He made a game of their search, offering as a prize an old pocket motor that weighed a couple of ounces. It would do everything, from opening a can of food to producing a slight anti-gravity field. Every pebble counted two points. Two pebbles found together counted ten, and so on. The first person to make a hundred would win.

The kids were long on brains, but they were still kids, and they liked to play games. They spread out, and their eyes began to search the ground.

Harj was the first to find any karite pebbles, with the excited Greider himself not far behind him. Then for about a quarter of an hour the search was fruitless. At the end of that time, Sonar discovered three pebbles lying close together.

As the hours passed, Roberts tried feverishly to think of a way out. He had a reprieve, but what good would it do him? Greider knew the law was being broken by collecting the pebbles. When the proper time came, Greider would be more certain than ever to get rid of the witnesses against

him. He'd eliminate not only Roberts, but the kids themselves.

If those pebbles were as valuable as they were supposed to be, the reward for the kids' return was nothing in comparison. Greider would kill them all, and escape in the Tronheim.

ROBERTS groaned as he thought of what that fool kid Whitney had done. The boy knew a lot, but why didn't he have sense enough to keep his mouth shut? Telling Greider about the karite had been the same as committing suicide.

His thoughts were interrupted by a sudden cry of fear from Harj. Greider was so startled that he dropped a pebble. "Stay away from it! Stay away!" Whitney was yelling.

"I can't!" wailed Harj.

He was running as fast as he could. Something that looked like a python was slithering along the ground after him. Greider, his face a dirty gray, drew his electropistol. Then there was a shriek from Sonar.

"Here's another one!" the ten-year-old cried.

Harj tripped, and as the first snake threw itself upon him, Greider's gun flashed. The front end of the animal, blackened and smelling of burnt flesh, came to a stop. The rest of it, more than twenty feet long, began to wrap itself around the frightened boy.

Harj tried to pull himself to his feet, and failed. Greider fired again and again. One section of the animal after another turned black, while the rest remained as alive and vicious as before.

The second snake had leaped at Sonar, and Greider pulled the trigger and held it down. Two writhing portions fell away from the charred segment in the middle—and one of them made for Greider.

Roberts saw the electropistol hit the ground as the man took to his heels. Then he became aware that Whitney was shouting.

"Get the one with the green stripe! The one with the green stripe!"

Roberts ran forward and grabbed the gun. As he did so, the first portion of the snake that had been blasted in two whipped toward him. He

pulled the trigger and split it again, but the pieces kept right on coming. Then he saw that on the upper portion of one segment, there was a pale green stripe, running lengthwise. That was the segment Whitney was yelling about.

Roberts turned his gun on it. As it shriveled under the heat, to his surprise the whole animal came to a sudden stop. Even the separated portions ceased moving.

He ran over to help Harj, who had been caught by the other animal. The section with the green stripe was coiled about the boy's leg, and he was almost perished from fear. Roberts aimed carefully, pulled the trigger and the lifeless coils fell to the ground.

"That was too close to suit me!" Roberts mopped his forehead. "This thing had more lives than a cat. What was it?"

"A segmented snake," answered Whitney promptly. "There are usually from twenty to thirty segments, each one capable of living semi-independently."

"What is each snake—a single animal, or thirty animals?"

"That's a matter of opinion. The segments are joined together, but they are easily detached, and the death of one does not affect the others. The single exception is in the case of the green-striped portion, the master segment. It seems to contain a primary brain center for all of them."

"Even when separated from the others, it keeps in touch by what seems to be a primitive sort of telepathy. It is the only vulnerable part of the animal as a whole."

"Lucky for us," Roberts breathed. "Are there many of these snakes around?"

"They are not uncommon on Ganymede. They are one of the chief dangers faced by the karite miners."

Harj had recovered from his fright.

"The records show," he chimed in, "that many hundreds of lives have been lost on Ganymede in the search for karite. That is one reason miners rarely come here to search for it."

"It's a pity—for him—that none of you kids told that to Greider before."

GREIDER himself had by now returned. Roberts looked up and saw the man's surly face a few feet away. Roberts' hand tightened over his gun.

If Greider had intended to kill them before, he would certainly not change his mind now that the kids had seen him run. But he no longer held the upper hand. Roberts, for the first time in days, felt that he controlled his own fate.

"I've changed my mind, partner," he said casually. "We're not staying here any longer."

By the expressions on their faces, he knew that the kids could sense the tension in the air. After all, thought Roberts, whatever friendliness Greider pretended, it must have been clear from his own attitude that there was no love lost between the two men.

"You mean you're letting all this karite go?" Greider protested.

"We've got no right to it."

"But it's just lying around waiting to be picked up!" Greider dug into his pockets. "I've got a couple of dozen pebbles here that are worth a fortune. All we have to do is stay here a couple of more days—"

"We're not staying," Roberts said. "The kids are coming with me in the Tronheim. As for you—" He hesitated. "You can have my old boat. It's too good for you, and it's a measly trick to play on the ship, but I'm not a murderer."

Greider took a step forward, saw the other man's finger on the trigger and relaxed.

"All right, you win," he snapped.

Roberts' face showed his sense of relief. Then he noticed that Sonar had raised his head, listening. A moment later, Roberts himself heard the sound that had attracted the boy's attention. A low hum had become distinctly audible.

"What's that?"

"The wind," explained Harj. "As it cuts through the mountain passes, they become vibrant."

"A minimal velocity is necessary for the sound to be heard," Whitney added. "This heralds the approach of the magnetic storms."

"Then we'd better get out of here quick. Get moving, Greider!" Roberts ordered.

Greider's eyes were deadly, but he obeyed. As they headed back toward the Tronheim, the noise of the humming stopped, then rose suddenly again from a different direction. Soon it became bewildering. First it was in front of them, then off to the right, then later to the left.

"The pitch is rising," observed Sonar.

"What does that mean?" Roberts asked.

"The wind is increasing steadily in velocity," Whitney explained. "As it reaches a higher note, it stops vibrating through one mountain pass and begins to vibrate through another. We shall feel it soon."

They felt it almost as he spoke. It swept down upon them and almost blew them off their feet. Roberts tried to shout a question, but his voice was lost in the howling of the gale.

The next moment Greider had started to run. It was the kids who called Roberts' attention to the fact that the other man was gone, and by then it was too late. Greider was past pursuit.

As they themselves staggered forward, they could see small stones glowing faintly green at their feet. Then the stones began to rise from the ground, and move forward along with them. As they rose, the wind took hold and began to drive them on.

The sky grew dark, but there was a lurid violet light that seemed to pervade the air. Roberts could see the larger stones beginning to stir restlessly and roll along the ground. One ten-pound rock sailed serenely past his head and vanished in the distance.

Somehow, without knowing how it had happened, they had passed from a rapid walk to a mad run. One of the kids stumbled, fell and found himself rising to his feet through no effort of his own, as a rock stirred under him.

Lightning began to streak the heavens. It crossed from one side of the horizon to the other, silently, with a terrifying emerald flash

that made their faces look ghastly. And in the distance, Roberts saw something that almost scared the wits out of him. One of the mountains was beginning to move!

Harj suddenly pointed and uttered a shrill cry. Roberts couldn't hear the words, but he could see the boy's lips move. The Tronheim! Something was wrong with the Tronheim!

The great ship, less than a hundred feet in front of them, was rolling from side to side. Roberts saw it rise a few inches from the ground, and then settle down again. It seemed to be straining at the leash.

Then out of the lurid, violet-tinged blackness, a running figure emerged. It was Greider, and Roberts lifted his gun and took quick aim. But as his finger began to squeeze the trigger, sudden doubt assailed him. He hesitated, and the opportunity was lost. Greider had dived in through the open door, a fraction of a second before the Tronheim lifted suddenly a foot from the ground. The door slammed shut.

"Why didn't you shoot, Mr. Roberts?" Whitney demanded, panting.

"It would have been murder."

"But he's taken our Tronheim! We're stranded!"

The motors were quiet, but the Tronheim was rising into the air.

"Quick, let's run for the other ship!" Roberts urged.

Another five minutes brought them to his gold-hulled monstrosity. It was resting on the ground, and they all piled in. Roberts sank into a seat and tried to catch his breath.

Outside, a gigantic boulder came sailing at them. It struck the gold hull a glancing blow, and was a quarter mile past them by the time they had begun to pick themselves up from the floor.

"We'll have to get out of here quick!" Roberts said.

"But it's too dangerous to rise now!" Whitney protested.

"Then we'll have to wait for a lull, I guess."

The lull didn't arrive for a good two hours. When it finally did, stones and boulders came with it, tumbling out of the air.

Roberts sprang into activity at the control board. The motors spat weakly and died. Then there was a thundering crash that sounded as if it came from a mile away. Roberts flashed a series of sparks through the rocket tubes, and suddenly one of them took hold and exploded. The vessel shot to one side.

The rest of the tubes began fringing, and he shut off the side rockets. In a few seconds they were above the smallest stones. The lightning began to flash below them once more. Roberts turned pale at the thought the motors might stop again. But the rockets continued to explode, and in another minute he and the kids were out of the danger zone.

Roberts' clothes were drenched with perspiration. He fell into a seat and relaxed.

"Very interesting phenomenon, magnetic storms," Harj observed brightly. "No one is completely certain what causes them. We know only that an amazing magnetic potential is developed between the two poles of Ganymede. The rocks, which have a high content of magnoferrite, even the largest, are lifted from the ground. At the same time, the air is ionized, and we see the lightning flashes and the peculiar lights."

"You're always showing off, Harj," Whiting rebuked him. "I'll bet Mr. Roberts knew that."

"No, I didn't know," Roberts said. "Go ahead and talk, all of you. I just want to sit back and realize I'm going to live for a while."

"But suppose," suggested Tanap, "we run into Mr. Greider again."

"We won't," Roberts shook his head. "I decided that when I refused to shoot him. The Tronheim's iridium-steel hull was highly magnetic. You saw how it lifted off the ground, without the motors going. As a matter of fact, the motors wouldn't catch in so intense a magnetic field."

ROBERTS eyes kindled. "Then when the lull came—" said Whitney.

"When the lull came, the Tronheim crashed. You heard that big noise,

(Concluded on page 126)

SCIENCE *Question* ? ? ? BOX

SYNTHETIC RUBBER

Editor, SCIENCE QUESTION BOX:

Is it true that industry is developing a better synthetic rubber than the original product?—E. B. N., Tulsa, Okla.

Yes. Rubber itself is a hydrocarbon with giant molecules, as compared with molecules of simple hydrocarbons such as acetylene or benzene.

Rubber made from chlorobutadiene has been on the American market since 1932.

More recently the Buna type rubbers have been developed abroad. Butyl rubber has been announced by the Standard Oil Company. Neoprene resists the swelling action of gasoline better than does ordinary rubber,

and the Buna types possess better heat and abrasive resistance. Butyl rubber is more stretchable than natural rubber. Natural gas, petroleum and commercial alcohol are the best source for the raw materials needed for synthetic rubber.

The first U.S. tire made of synthetic rubber was displayed at New York City in 1940. As to volume production and the overcoming of many other problems which will arise, time alone will tell.

PLANT GROWTH

Editor, SCIENCE QUESTION BOX:

What is this new "pollen" method for speeding up plant growth?—P. S. D., Lincoln, Nebraska.

You are probably referring to the growth-promoting hormone developed from corn pollen by Dr. John W. Mitchell of the Department of Agriculture. This is extracted by ether, evaporated, and then mixed in a

lanolin base. This ointment is spread on the plant parts where growth is desired, and the results have been almost miraculous.

You might write to the Department of Agriculture for more detailed information.

THE LARGEST ANIMAL

Editor, SCIENCE QUESTION BOX:

An item in August SCIENTIFACTS in THRILLING WONDER STORIES about the largest predator—*Saurophagus maximus*—has brought up an argument as to size. Just what was the largest animal ever known?—J. O. O., Ft. Smith, Ark.

The largest animal that ever lived on Earth is still extant. It is the blue, or sulphur-bottom, whale. This mammal is about twenty feet long when born and grows to the prodigious length of from eighty to one hundred feet by the time it is twelve years old.

This whale is considered the most valuable by whalers. While the industry has waned there is still considerable whaling done, spermaceti, whale oil, whalebone, etc., still

being in demand. Contrary to popular belief, the whalebone used so extensively in the past for corset stays, umbrella ribs, hat plumes and such is inaccurately named. Whalebone is formed in the palate on the roof of the mouth and is an exaggeration of the ridges, often horny in character, which are found on the roof of the mouth of all mammals. Thus, a blue whale has to reach a growth of at least fifty feet before its

"whalebone" has commercial value.

TIN-STRATEGIC METAL

Editor, SCIENCE QUESTION BOX:

Just why and how is tin such a vital metal to our war needs?—W. S. W., Paterson, N. J.

Tin has long been maligned as a cheap, flashy metal. On the contrary, it costs about fifty cents per pound. Most of it comes from newly mined ore—cassiterite—of which there are no deposits in the United States of commercial value. Thus, we have to import

practically our entire supply.

Besides coating cans and toothpaste tubes, tin is used for electrical connections, solder, and extensively in metal bearings and bronze alloys—a vital need in mechanized war. Most suitable substitutes are impracticable.

Address Your Questions to SCIENCE QUESTION BOX, STARTLING STORIES,
10 East 40th Street, New York City.



A Department Where Readers, Writers and the Editors Get Together

ALL right, all right, pull the plug, one of you space monkeys, and let's jettison all this bilge that has seeped in from the last space storm. Before we air out the astrogation chamber and then fumigate with an Xeno spray, I guess you kiwis want to know what's in the forward hold for next voyage.

Okay, I'll tell you. An astrogator out on the West Coast by the name of Ross Rocklynne has written **THE DAY OF THE CLOUD**, a novel of super-gravity and a lot of crackpots and a wise father of the twentieth century who tries to make a stalwart man of his son. He goes about it in the most astounding manner we ever heard tell of in the entire Solar System, plus a couple of extra comets. The old boy projects his son—not to a sanitarium, an institution, the Foreign Legion, or the penitentiary—but into the future!

You take it up from there, Goggle-eyes, and see if you can get the rocket blast kick out of the yarn that the old space dog did. If you can't, we'll have your dome streamlined and your air speed accelerated. You can sound off after you read it.

Meanwhile, my little dream friends, be advised that the Hall of Fame Classic in the next cargo will be **THE ANCIENT BRAIN**, by A. G. Stangland.

If any of you little beasts never read it before, now is your chance to catch up on your worthwhile science fiction. And of course the old Sarge will find space to stow away two or three short stories that'll close your gaping jaws with a series of clicks that'll remind you of the castenet dancers of Neptune.

ETHERGRAMS

ALL right, kiwis, I've adjusted my gas mask. Open the mail bag. Let's peel out the beefs, squawks and bouquets and see what gives.

SCIENCE QUESTION BOX

By Alfred Hansen

Here's a question that's been bothering me for some time. What would happen if an irresistible force met an immovable object?—1312 Fries Ave., Wilmington, Calif.

You know, kiwi, that question which has been bothering you has been bothering a lot of college physics professors and high

school students since Gutenberg invented movable metal type and some monkey printed a book with words you could read. So don't make fresh with the old Sarge, or I'll maroon you in one of the ice caverns on Pluto, and wouldn't that chill you off!

But you don't stomp the old space dog. I'm going to answer you. It's just like you irresistible peeloets writing a lot of hooey to the immovable Sarge. What happens? The irresistible force bogs down and stalls—while the immovable object blows up. And that's as good an answer as you'll get in a day's rocketeering.

There's another old saw that belongs in the **SCIENCE ICE BOX**, too. Which came first, the chicken or the egg? If you want the right answer to that one, write the old Sarge the question on a plain sheet of paper and enclose a stamped and self-addressed envelope, and you shall have your answer by return mail.

Next case.

CATCHING UP ON THE BEEF

By Clifford Coleman

Just a little line to let you know that I'm still an SF fan, and still a **STARTLING** fan. I've been so busy since my last letter (Sept. '41), that I have not only been unable to write, but have been forced to lay aside my later copies of **TV'S CAPTAIN FUTURE** and **STARTLING STORIES** until I could get a chance to read them.

Well, that chance has come and I must confess, I've been pretty well satisfied with them on the whole. I am getting pretty tired looking at handsome men with wacky guns and beautiful girls with horrified expressions on their faces. (Some of those girls aren't so beautiful though.) As you know, I am a bug-eyed-monsterite, and am dying to see some good old gaudy monstrosities on the cover, like in years gone by.

I realize you're in a pretty fix with a pack of monster-hating wolves ready to tear you apart at the drop of a BEM, but since "The Ether Vibrates" obviously is in existence to find out what the readers want, I don't feel too sorry for you when the brickbats and dirty cracks come flying at you.

Here are my criticisms of the latest **STARTLING**: the cover just doesn't set well with me; the girl is gosh-awful; the devil is no good; the scene never appears in the story; etc., etc. "The Ether Vibrates" is, as usual, pretty good. You pull some good cracks and receive some good ones, too.

I'd like to compliment Ray Beebe on his excellent taste in reference to baseball teams and fans. I'm a confirmed Dodger-hater and Giant fan, but that's straying from the point a little so let's cover the stories.

"Blood on the Sun" was excellent; best among recent issues. Hal Wells really ought to be used a little more. The illustrations were good, considering that I prefer Finlay in Fantasy mags, but there weren't enough of them. "Alia-Begg's Genii" was also a very good short. "Macrocosmic" was the one let-down.

I appreciate the work Friend puts on those Thrills in Science, but you really don't need them. Give Oscar a book-length tale and let him thrive where he always has. Passing back to the art, there's been a noted absence of Alex Schomburg. He's good. How about that?

Keep Paul, Finlay, and (need I say) Krupa off the covers. Bergey, Brown, and even Belarski are all real. If they'll just make the covers a little different. It's settling so now, that every cover sports one or two handsome guys, a pretty girl, and sometimes their whole family; mother, father, uncle, etc. Your Hall of Fame stories are good, but they never seem to have good pics.

You've got a whole letter here with kinks and beefs, but SS must be darn good or else all those guys who write in wouldn't bother —359 Center Street, West Haven, Conn.

Surprising as it may seem, Kiwi Coleman, you've written an unusually good critical letter. There's no point in trying to pin the long ears back from the brow of intelligence. No, no, don't start swelling in the chest. There'll be plenty of fans who won't agree with anything you say, some of them purely as a matter of principle.

TRIMMED EDGES

By Gene Hunter

Probably to Mr. LeRoy Tackett's disgust, I want to announce the origination of yet another S-F society. To wit: the SISFPITE, or Society for the Improvement of Science-Fiction Publications by the Introduction of Trimmed Edges. Perhaps to a reader who just buys the mag to read and then throws it away, one type of edge is just the same as another. But most real lovers of s-f file away their copies and consider themselves real collectors.

Being one of the latter myself, I want trimmed edges, as they not only look a lot neater, but filed away, they keep in much better condition, and you don't have a lot of torn pages and rough, unsightly edges. I hope every reader will back me up. Come on, fellows, let's pull the old Sarge up offa that high horse, and demand trimmed edges!

Now to get on with the May issue. Personally, I may be one in a million, but I like Bergey! Though he's not tops in s-f illustrating, he's got that guy Wesso beat ten ways from Sunday.

As to the inside illustrations, Finlay was the only guy in there as far as I am concerned. The pics for the other yarns were terrible!

As to the stories themselves—
"Blood on the Sun" was of course first, a swell yarn!

Coblentz' reprint was a dandy. Coblentz is one of my favorites.

"Macrocosmic" was different. Pretty good.

"Alla-Beg's Genl" was okay.

All in all, not a bad story in the whole mag. SS must be on its way back up the ladder.

But please go monthly.

And remember the SISFPITE—616 E. McCarty Ave., Jefferson City, Mo.

All I gather from your ethergram, Kiwi Hunter, is that you want to get trimmed. Otherwise, things satisfy you. Well, Barnum or somebody said something about something or other—oh, never mind. We'll think about your trimming idea, Gene.

THE MISTY ISLE YARN

By Jack Kamolnik

I just bought your May issue of STAR-LING STORIES and read with shocked amazement the Hall of Fame story, "The Making of Misty Isle," in which a warlike America makes an unwarranted attack upon peaceful Japan. I think a public apology will be in order in your next edition. I shall look for it—1484 St. Marks Ave., Brooklyn, N. Y.

Well, bless my soul, or blast my rocket,

what's all this? In the first place, kiwi, that was a Hall of Fame yarn of some years ago. Things have changed in the political picture and in the public knowledge since that day. In fact, if we had known then what we know now—Pearl Harbor and such—we really should have blasted the pants off the little yellow vermin without warning.

You want an apology, eh? To the Japs, no doubt! Okay, here it is. We are sorry, Hirohito, America didn't give you a hot rocket in fact, instead of in fiction, years ago. And that's the handsomest apology the old space dog can think of on the spur of the moment.

But I know you mean right, Peelot Kamolnik, or the old Sarge would ram a rocket sleeve down your gullet.

SHOOTIN' ORDERS

By John M. Eakin

Hello, you old space rat: How are you doing? Quite well I hope. Say, by the way, I found your Xeno jug, and ever since I've been flitting from one planet to another. Please hide it better.

I have just finished the May issue of STAR-LING STORIES, and I consider "Blood on the Sun" a very good story. Wells is a good writer, but it's too bad you haven't any cover artists. Maybe if you gave Bergey a shot of Xeno he could improve his style. The main trouble is making his colors blend, but there seems to be nothing any of us kiwis can do about it unless we go to extremes and call in our Martian Espionage and Saboteurs Committee to clean up your covers.

I liked "Macrocosmic" by Maddocks. He has presented an idea that many people hold to be true. As for "Alla-Beg's Genl," it wasn't quite as nice as a shot of Xeno.

Don't forget to double Bergey's guard, or we'll get him as soon as we see him. It's "shoot on sight" for our orders here in the Seventh Infantry.

So long until Saturn comes over the horizon with the next issue of SS—Fort Lewis, Washington.

So, we've got the army sniping at the art work now, eh? And you want the old Sarge to pep Earl Bergey up with a shot of Xeno so his colors will blend, do you? A lot you know about Xeno, peelot. One shot of that and the colors would run together like the dye in a print dress from a bargain basement. But I'm glad you liked the reading matter, and maybe I'll let Bergey smell the vitrolite stopper of my Xeno jug.

XENO-JUG RATING

By Paul Carter

So! "Rocket Pants," he calls me, hah???

Well, I asked for it.
And yet again the Jolly S. S. docks at our space station, with a wrapper designed by Comrade Bergey. You know, it's really too bad there wasn't a story back of that cover.

Just think what Oscar J. Friend could do with it: a red giant being fired at by three bombers and two battleships, the Empire State Building under one arm and the Statue of Liberty under the other! My, my. Still, this cover is 100% better than last month's which was no good except for flames and BEMA. Now, having torn the cover off and rolled it into a cigar (loaded with U-235, of course), your space-mad pilot proceeds to bring the rest of the magazine crashing in ruins.

Wesso's character sketches almost always ring the bell, and this time is no exception. Averaging in the other illustrations, we arrive at the sum of 4 Xeno jugs, which is very good indeed. The pics by other artists get

1 1/2 Xeno jugs each (the extra 1/2 a jug goes to the honorable Sarge, because he is the only bottomless drinker on the staff). And now we get to the fiction.

"City of Glass" is another top-ranking novel. These new concepts which Loomis advances are really refreshing, and his silicone-men are completely believable. The "Wheel Thing" is delightfully horrible. But the best thing in the story is the fact that the author reforms his villain instead of bumping him off.

I was anticipating some seemingly insurmountable obstacle interposed in the hero's path by Zudat on the next to the last page, followed by the problem's solution, by the death (preferably by Zudat) on the final page. The change in tactics is not only a complete surprise but the perfect ending to the story. Thank you, Author Loomis. We're waiting breathlessly for the sequel.

Among the shorter material, the Hall of Fame reprint carries off highest honors. This resurrection of the "Pygmalion" theme was very well written indeed. And for once even the blurb was good, Svengali vs. Pygmalion—some combination!

Despite the fact that it borders on the fantastic theme, "The Ghost Ship of Aztlan" gets the next place, by sheer strength of writing. I notice that some of the shorter material in all three of your magazines has been tending toward fantasy.

No doubt that will raise a howl among the strictly scientific fans, but I don't disapprove at all. After all, where can one draw the line between S-F and fantasy? Sarge, tell 'em the one about the Haunted Spaceport. That'll make the skeptics think twice.

"The Man in the Moon" once again brings home the sheer stupidity of humanity in general. The lack of cerebral substance displayed by some people, such as the cop in this yarn, is appalling. Of course, a space-mad sap like me shouldn't be making cracks like that. Maybe I'd better crawl back into my cage until next issue—156 S. University St., Blackfoot, Idaho.

Nice going, kiwi. You wrung a chuckle out of the old Sarge with your Xeno-jug grading. Maybe you have something there. And you are quite right about that shadowy, hazy line between fantasy and science-fiction. The old Sarge doesn't know just where to draw it. In fact, I don't want to draw it. We don't care what classification fits the story as long as we get good entertainment and thought-provoking ideas.

But I can't decelerate and chin overlong with you here in space. There is more mail to hang out on the line.

A LITTLE VITRIOL

By Victor King

Beloved Sergeant: Your novel by Noel Loomis, this issue, could by no stretch of the imagination be called a great one, yet it is certainly a good one.

It doesn't seem to have as much pseudo-science as most stories, being rather based on strictly legit science. The evolution of human microscopes and fluoroscopes seems to be a new idea in fiction, though I have run across it once or twice in articles.

I question the explanation of how the spaceship was turned about despite the fact that it may be plausible—I do not know. Mr. Loomis should have used the curved universe, even if it is a little over-worked.

There are some pretty nice touches of satire in it: Ylair, et al.

"The Marble Virgin" may be all right as fantasy. As sf it's terrible. In one process, all the countless millions of types of molecules are created in their correct positions, and the statue is brought to life. I repeat, in one process. Ain't science wonderful?

"The Man in the Moon": Science-fiction? The smatterings of science that did exist were so sketchy and vague that I doubt the author knew what it was all about. Add to that one of the moldiest ideas in the realm of

imaginative fiction, and you tell me what we've got.

"The Ghost Ship of Aztlan": Hansen tells a story better and that quality salvages it. It, too, is 1,000% hack.

Just what is this issue's cover supposed to represent? Not that it's bad, but I don't get it. The interiors were uniformly lousy.

By all means, another contest. What is a fan if he can't get original? Who says we can't pull together on our illustrations? I don't think you'll find a single black-balling vote on Finlay. Let's have more of him.

Sarge, you have terrible correspondents. None of them disagree with me on a controversial issue. I couldn't knock the stuffing out of a single letter, and what's the fun of writing mash notes all the time? Let's have a little vitriol—711 South Arch Street, Aberdeen, South Dakota.

Yeah, you're a swell kiwi to talk about vitriol—starting your letter with "Beloved Sergeant." Where do you get that stuff? Are you getting space-sick? Anyway, you didn't ask any questions that I feel compelled to answer.

Sure, I'm in favor of a little vitriol myself—the non-eating, non-corrosive kind. If I really thought you kiwis meant to be actually vicious I'd tie your spinal columns around your throats for neckties.

WHO DONE IT

By Bob Ewald

Some chatter about the July number.

Stories: Loomis looms up with the third best novel of the year. "Farnished Utopia" just nosed out "City of Glass." "The Marble Virgin" was good, and a swell choice for Hall of Fame. Morrison's short story very good. Hope his novel will be as good as this opus. Hansen's tale the best short ever to appear in SS.

Art work: As far as page 86, dandy—even Bergey's giant cover. At least, it was fairly accurate. Morey was sketchy and generally intolerable. Using Carter's system, Morey rates a glass of buttermilk. Parkhurst is okay for detectives and westerns, but not for science-fiction. A glass of grape juice.

Question Box: When do we get a Wesso cover? A Paul-illustrated novel? Also, I'd like to know, please, who drew the illustrations for the Weinbaum novel in the first issue of SS? And getting modern, who in heck drew the illustration for "The Man in the Moon"?

Well, I guess that's enough questioning for you, dear space sap. I want to go hunt an Alla-Beg genie—General Delivery, Cygnat, Ohio.

I like the Xeno-jug gradings better, Kiwi Ewald, but you take the high road and I'll take the by-road, and we'll both be in the gutter by morning. Let me scratch my head and answer those questions of yours to which there are concrete answers. Wesso did the art work for "The Black Flame." W. Kolliker did the illustration for "The Man in the Moon." To the rest of your inquiries, I don't know. I'll turn 'em over to the art editor.

Yeah, I know—there's one question running through the ethergrams this voyage that I haven't answered yet. I was sorta saving up the answer until all the queries were in—like staying late for the election returns. But I give in about here. It's about the July cover.

That painting didn't represent anything in the magazine. It was just a symbolic or spectacular cover to let you kiwis bite your fingernails over. And, as it belongs to no particular story, I don't have to explain a

darn thing about it, see? Pass the Xeno jug, Goggle-face, and have an aspirin yourself.

I have a couple of ether flashes from the Mason brothers in Franklin, N. C., but I can't figure the marks all out because I left my Martian reading glasses on Jupiter last trip. From the general space drift I gather that all three of our mags are doing all right but why don't we get along with that annual?

We'll see, boys.

SARGE HAS 'EM SCARED

By Thornin Yorsyd

First: Why do I write? Second: What right have I to? Third: What do I think will come of it?

First: I write because I plunk down my sold fifteen Lincolns when I pick up a **STARLING STORIES**, and lately, I've been disappointed in it.

Second: I have a good right to write because I've read **STARLING STORIES** since its grand first issue and since then have held it securely as one of the top three mags of the nation. I have praised, cudgeled, pleaded and yelled about SS until lately I see it going down . . . down . . . down . . .

And third: I don't think anything shall come of it. I even do not expect to see this branded on one of **THE ETHER VIBRATES** pages, and if it is, I know that the most it will merit is a casual glance by the **SERGEANT** who will scribble some exceedingly clever comment at the end and ship it to the linotypist, take a sip of Four Roses (No! Not Xeno!) and forget it.

With that last in mind I realize I write simply because the urge to tell you something of how I feel has been slowly building up until I can hold it in no longer.

One of the first things I search for when I buy an SS is the reader's column, but now it

is something I read only with a tall glass of alka-seltzer within easy reach. The letters in it are **TOO SHORT**. The fans in the column have been bull-dozed until they are actually scared to say what they mean and mean it!

Now there are only a few scrappy letters—generally all of them too short to even merit reading, spaced by lengthy and useless comments by the Sergeant.

To remedy this we can do three things: We can welcome long, long letters and ask for criticism, hard and frank. A well-put plea might attract some fans who can really write. Then we can enlarge the column by five more pages. And lastly, we could offer some little prize for best letters which would tend to greatly better the letters, and as the competition gets stronger, you'd receive more and more missives that shall be of actual use to you, providing you ever paid ANY attention whatsoever to ANY fanote.

And the stories: Once the brilliant names of Williamson, Weinbaum, and Wellman graced the contents pages by the sides of stories that have since been notched as classics and recommended to sit-posterity. Now it seems that the stories are no longer startling. Simply yarns which you can only term as "all right" at the very best. We don't want all right stories in SS. We want classics!

The easiest way to do this is to change your authors, or fish for novels by those who have done the job before, like those above. **CITY OF GLASS** by Loomis was the type of story you read and like, once you've read up everything you have on hand. It can be spotted as "all right" but it seemed rather weak-kneed in structure. It wasn't in any way boring, and that's something to its credit.

THE MARBLE VIRGIN was the best tale in the issue and its age seemed to only increase its flavor and appeal.

Hansen's bit was rather humdrum—yet I didn't at all dislike it, while **THE MAN IN THE MOON** is just about the acme of Morrisso's writing ability.

One thing that struck me was the fact that

[Turn page]

PROVES MAN IS GOD

A strange method of mind and body control, that leads to immense powers never before experienced, is announced by Edwin J. Dingle, F.R.G.S., well-known explorer and geographer. It is said to bring about almost unbelievable improvement in power of mind. Many report improvement in health. Others acquire superb bodily strength, secure better positions, turn failure into success. Often, with surprising speed, talents, ability and a more magnetic personality are developed.

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Most of us know that God is everywhere, but never realize that God cannot be everywhere without being also in us. And if He is in us, then all His wisdom, all His power—unlimited knowledge and infinite power—is likewise in us. If God is everywhere, then there is nothing but God, and we also are that—a completely successful human life being the expression of God in man. The Holy Spirit of the Bible is an actual living force in man, and through it we too can do "greater things than these." The method found by Mr. Dingle in Tibet is said to be remarkably instrumental in freeing our minds of the hypnotizing ideas which blind us to the vast power of this living force within us.

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SS is horribly—yes, I said horribly—illustrated. Wesso's work is obviously rushed, and he's about the only half-decent artist you employ.

Back to the column: (That's where the greatest improvement is needed). We want more letters like that of Victor King's. That's a letter! The rest are merely shabby notes. King is in stride, at least. (Keep 'em coming, Viking. Together we might slap THE ETHICAL VIBRATES into shape. Not with our letters, but with our free advice.)

Benham could write a good letter if he tried. Carter could, too, but he keeps yelping about Xeno and playing up to the Sergeant. In fact, they all could, but you've got 'em scared. How's about easing up and giving 'em elbow room?

This is too much of nothing as it is, so we shall save our ribbon further beating. I hope there's something in all this mess that'll help ya, and if there is, you're welcome.

For now . . . goodnight, and pleasant nightmares—700 East North Street, Opelousas, La.

See here, you space monkey, what's the objection to using your real name? Only because you gave a bona fide address, signed the letter, and wrote a fairly good one saved it from the waste-basket. Thorn in your—side, indeed! You're not even an itch in the—afternoon.

Hold still, Goggle-eyes, while I pin your ears back. We gather from your rocket blast that outside of the editors, authors, artists and readers, STARTLING STORIES is okay, along with you and Kiwi Victor King. As soon as we get a vote from Vic on this classification, we'll have a quorum. So we'll call a bull session and open a fresh jug of Xeno.

What do the rest of you peels think? Are you really afraid to say what you think? Not in this democracy.

Hold everything! Here's a final rocket blast deep from the heart of Texas.

WHAT? NO COVER STORY?

By Kenneth Haun

"Ah ha!" the triumphant cry started passing citizenry as it thrust forth into the still night air to quiver and die away into the silence of distance. The cause of this outburst was I. The cause of my outbursting was the cover of the July issue of S. S. "Ah ha," I thought to myself again, "that's a very good cover. Wonder what story it's from." I flipped quickly through the pages. "What, no story to go with the cover?" Sarge, tell Bergey if he ever does that again I will personally keel heem!

The novel, however, was pretty good but nothing out of the ordinary.

Oh, yes, I forgot something else about the cover. Since when was the Statue of Liberty half as high as the Empire State Building? The H. of F. story was very good, although a little old. The other two shorts did all right.

Well, I guess I had better get back to charting that course to Alpha Centauri—110 West 16th St., Austin, Texas.

I knew it! Another beef about the cover. I tried to hold off until the last chapter before I revealed the grisly secret, but I just couldn't summon up that extra required amount of fortitude. See what I mean?

Kiwi Haun, you go back over this department and read my response to Pelot Bob Ewald. Shakespeare doesn't repeat (says who?) and the old Sarge doesn't stutter. (Says me!)

As for the rest of you junior astrologers, the old space dog is holding up the mirror again for you. If you don't like

what you see in THE ETHER VI-BRATES, do something about it. If you want to discuss the quandam theory or the fifth proposition of Euclid, or the possibilities of hobby-gobbies being extant on the Moon—or even the twelfth kink in the curvature of space as multiplied by the Nth square of the expanding universe—just cut loose.

I'll print your letters if they are not too profane. Oh, no, it doesn't matter whether the old Sarge will understand the subject matter or not. He doesn't understand half of the gibberish which passes through his hands now.

Blast on, you space apes, and pleasant chattering to you in the spatial jungles of Outer Nothingness. Don't evolve too rapidly under the jabs of the cosmic rays. Or should I say "comic" rays?

Let's have a wider assortment of letters from everywhere! Come on, you timid or reluctant or lazy peels of the outlands, write in and change his diet for the old Sarge. Else I must go back to the solace of Xeno.

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fanzine—FAN-DAMN. Don't read it in transposition.)

FAN EDITOR AND PUBLISHER
(Quarterly), 2409 Santee Avenue, Columbia, S. C. Editors, Harry Jenkins, Jr. and Joe J. Fortier. Price 10c per copy; 3 for 25c.

Ah, let me sink my eye teeth in this one. This is the mag announced last issue, if my Xeno doesn't fall me. Volume One, number one. Eight full-size yellow sheets with a nice thick white cover containing a surrealist drawing of a marine garden on the planet of Kaleidoscopia. Sub-title—"spots before your eyes." I particularly like the amphibian with the wash-board belly. He can launder his shirts and wear 'em at the same time—if he wears shirts. The bust of Pallas in the upper right-hand corner seems a bit extraneous, but then these Earthmen spaceteers will go anywhere. Nice articles nicely written, and sprightly headings and doo-dads. Elite type and clear-cut. Distinctly worth reading.

FANTASY FICTION FIELD NEWS-WEEK (Weekly), 1702 Dahill Road, Brooklyn, N. Y. Julius Unger, editor. Price 5c per copy; 8 for 25c.

Eight copies for a two-bit piece! Holy space rockets! Bargain day in Brooklyn. The old Sarge has reviewed this mag a couple of times already. No change in the legal size format, one or two sheets—as the news ebbs and flows, occasionally a print of the cover of a forthcoming professional mag. News of books and mags and things. A heterogeneous assortment of stuff that reminds the old space dog of his tool locker. Plenty of news for you kiwis, though.

FANTASY-NEWS (weekly), Box 84, Elmont, N. Y. William S. Sykora, editor. Price 3 issues for 10c; 8 for 25c.

Another bargain day in news. This little space rocket belongs in the same category
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FANTASY REPORTER (Formerly Fantasy-Times) (Monthly), 137-07 32nd Ave., Flushing, N. Y. James V. Taurasi, editor. Price 5c per copy; 5 issues for 25c.

Well, Jimmy and Sam Moscovits have dressed this one up. They've improved their elite type and neatly mixed in some red ink with the black and have gone artistic with red-ink rulings. Has a professional look. The main subject matter in the June issue is Technocracy. Some of you fans are on this pan. Read it for yourselves.

FUTURIAN (Monthly), 4 Grange Terrace, Chapelton, Leeds, England. J. Michael Rosenblum, editor. Price 3d per copy; 75c per annum. Exchange with other fan publications arranged.

Five sheets of slick white paper, 8 1/2 x 10, nice cover illustration in three panels, black and gray. Plenty of news about fandom, in Great Britain and elsewhere. Nice work, peepit. The old Sarge has a soft spot in his heart for fanzines from across the big pond. Worth reading.

NEBUJA (Weekly), 333 E. Belgrade, Philadelphia, Pa. Rusty Barron, editor. Price 5c per copy; 6 for 25c.

Another weekly of two sheets, standard size white, black ink. No special departments, but lots of fan news. No excuse for you klwis not being posted on what gives. You'll know more than the old Sarge if you read all these fanzines religiously. (Which may not be such a compliment upon careful analysis. Put down that cyclotron, rocket pants.)

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POLARIS (Quarterly), 2409 Santee Ave., Columbia, S. C. Harry Jenkins, Jr., editor. Price 10c; 3 for 25c.

Six sheets of standard size green paper with a pale blue cover illustration symbolizing King Death on a space drunk, disembodied skull head only with a crown of bone like a crown roast. Nice mimeographing in elite type, black ink. Good articles, format neat, graceful sub-heads. Mostly fiction. The old Sarge fell asleep over the last page. (It was blank.)

SCIENTIFUN (When and if.) Live Oak, Fla. Raymond Washington, Jr., editor. Price 5c per copy.

Five sheets of standard size orange-yellow. Black ink. Cover illustration of a flight of three rockets from a Mae Westish Western Continent. An occasional heading illustration to lighten the flow of words.

SPACEWAYS (Eight times yearly), 303 Bryan Place, Hagerstown, Maryland. Harry Warner, Jr., editor. Price 10c per copy; 3 for 25c.

Ha! Twenty-six sheets, including the front and back green covers. Interior of standard white sheets with single-spaced black type. Get my magnifying glass, bug-eyes. I haven't seen so much wordage since I read "Gone With The Wind." It looks okay from here—articles, editorials, fiction, humor, verse and features. An occasional drawing or dingbat to make oases in the type.

VOM (Published approximately), Box 6475, Met. Station, Los Angeles, Calif. Price 10 per copy.

Good old VOM becomes a DYKTAWO publication for the duration. That's all the old Sarge can make out of the cryptic, phonetic

[Turn page]

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spelling. Don't ask me who is the editor or what "approximate" publication means. All I know is that I've got one April, 1942, copy for review. Fourteen pages, with a nice Halloween cover illustration of a witching with chasing a black cat with a broom. Don't ask me any questions, Wart-face; I didn't get this thing up. I only try to interpret it. The three-legged Martian lion on page 8 is highly reminiscent of Weinbaum's "Twirl" or whatever his name was in the "Martian Odyssey." The professor, on page 9, looks like the old Sarge poring over an astrological chart drawn by a junior kiwi.

And that's all for this issue. Ho-hum! Pass me the Xeno jug, Wart-face. You take the aspirin. And take my reading glasses down to the optometrist and get a new pair of lenses. I wore 'em out on this batch of fanzines.

Carry on, you hard-working dopes. The old Sarge is gonna take a snooze.

—SERGEANT SATURN.

KIDS DON'T KNOW EVERYTHING

(Concluded from page 114)

didn't you? That was it, and it's good-bye to Greider. But this crazy old boat of mine, with its gold hull, and even a lot of gold parts in the motor—"

"It's non-magnetic!" Whitney exclaimed.

"Right. You boys know a lot, but don't know everything. I didn't know much, but I knew that one thing. And here we are, headed for home."

The gnarled fingers ran lightly over the control board.

"The old boat doesn't look like much, but it does get you places. It sure gets you places," Roberts grinned. "Maybe I've taught you kids something, after all."

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Meet the Author William Morrison, Chemist Who Knows All the Elements of a Good Yarn!

WE HAVE an ambitious writer with us this issue. Not satisfied with all the trouble that can pile up on this one old weary planet, he has to dig up TWO WORLDS TO SAVE.

Folks, step up and meet the original of the passport photo just below. Meet Author William Morrison.



WILLIAM MORRISON

Bill isn't nearly as tough as his picture, and all spots and blemishes are due to faulty developer solution. The comet whorl on the necktie was borrowed from Captain Future for the occasion. Bill, meet your public. While you are shaking hands, I'll give the history of the case for the benefit of those who came late.

Other people have wasted their time reaching for the moon. William Morrison was a little more ambitious than that.

He tells us that long ago he used to look up at big shining planets like Venus or

[Turn page]

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Mercury, hanging so low in the sky that it almost seemed he could reach up and grab them, and think of what nice playthings they would make. In time, that dream, like the dream of being a cowboy or a fireman, was forgotten—until it came back recently.

Now Morrison has got Venus and Mercury, and all the other planets, to play with. In TWO WORLDS TO SAVE he takes Mercury and makes it over a bit. The result, we feel, is pretty satisfying.

While getting ready to do a job on the planets, Morrison took a lot of knowledge pills a couple of our leading universities hand out.

He says he digested them just well enough to end up with a Ph.D. from Yale and work as a research chemist for five years. At the end of that time he put away his test tubes and decided to rely on his pen.

Not until he had had a detective novel published did he learn of the existence of science-fiction magazines. It was a case of love at first sight. He's done a lot of other stuff since then—long and short detective stories, as well as non-fiction. But he tells us that to him science-fiction is still in a class by itself.

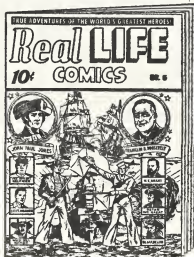
He turns to it with the same eagerness that a schoolboy turns to playing hookey, for the pleasure of getting away from the everyday world and being allowed to let his imagination roam.

When he's on his home planet, Morrison is just an ordinary guy with the usual bad habits (and he claims, a couple of good ones).

He's married, and a proud father. He's still a chemist, likes to swim, and having been born in a small town, thinks New Yorkers don't walk enough.

If you like TWO WORLDS TO SAVE, he'll try to dig up an extra planet somewhere for another yarn!—THE EDITOR

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Uncle Sam Is Going All-Out on Gliders—Men Needed!

THE United States Army is now going all-out on gliders. The deadly technique of landing companies, regiments and even full divisions of men silently from the sky which the Germans used so successfully in Crete last year is to be turned against them when the great invasion of Europe finally gets under way.

The advantages of glider attack are obvious—the ships are economical to build and easy to replace—the element of surprise is immense, for no detector can pick up the approach of a motorless plane and gliders can be released from a towing ship while miles away from their objective and still hit it on the nose.

What is needed are men—for a man's job.

As this force—exact numbers, naturally cannot be given—is planned to number about a hundred thousand men, the field is wide open. Here are the qualifications for membership:

The applicant must be a citizen of the United States between the ages of 18 and 35 years, inclusive. He must be able to pass the physical and mental requirements. Formerly, prior flight training was considered essential, but these restrictions have been removed in order to give everyone a chance to qualify as a glider-pilot, regardless of the extent of previous experience.

He must be in reasonably good condition—though the bars are a bit lower than for the regular Air Forces—reasonably well educated and intelligent and must be up to general Army requirements. He will be given training, first at a CAA school on light planes with emphasis on dead stick landings, then get down to intensive training with gliders themselves.

Those who graduate successfully, be they civilians or Army men, will be given at least staff sergeant's rating with full flight pay. And, as it is a new service, commissions are going to come more easily than in other services at least until officer ranks are filled.

As we just said, it's a man's job and a great privilege—a chance to get in the first whacks at the Axis—and the rewards are great. Let's go, fellows. Keep 'em gliding!



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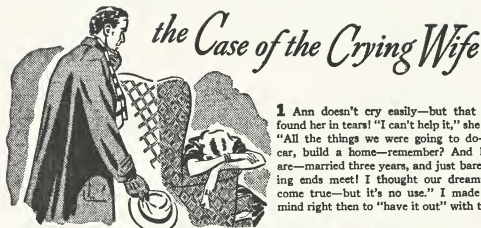
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1 Ann doesn't cry easily—but that night I found her in tears! "I can't help it," she sobbed. "All the things we were going to do—buy a car, build a home—remember? And here we are—married three years, and just barely making ends meet! I thought our dreams might come true—but it's no use." I made up my mind right then to "have it out" with the boss.



2 "Look here!" he said. "I can't pay you more unless you're worth more! And frankly, John, you lack the training a bigger job needs. Ever hear of the International Correspondence Schools?"



3 When I learned the boss was a former I.C.S. student, I signed up quick! And what a difference it made in my work! I'd never realized until then how little I knew about the business.



4 I'm happy, and Ann's happy, and I guess the boss is happy. (At least I've had two "raises" in the last year!) And here's the very same coupon that I mailed, staring you in the face!

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